

z/OS



MVS Migration

z/OS



MVS Migration

Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 81.

Sixth Edition, June 2002

This is a major revision of GA22-7580-04.

This edition applies to Version 1 Release 4 of z/OS™ (5694-A01), Version 1 Release 4 of z/OS .e™ (5655-G52), and to all subsequent releases and modifications until otherwise indicated in new editions.

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About This Document

This document helps you prepare to migrate the MVS™ element to z/OS Version 1 Release 4 (V1R4) from earlier releases (z/OS V1R3, V1R2, and V1R1). Specifically, this document:

- Gives technical descriptions of the enhancements provided by the MVS element of z/OS, including enhancements to the Parallel Sysplex environment.
- Describes MVS-related migration actions that customers must take when migrating the MVS element to the current release of z/OS, including Parallel Sysplex® migration actions..

This document supports z/OS (5694–A01) and z/OS.e (5655–G52).

Who Should Use This Document

This document is intended for experienced system programmers responsible for migrating MVS to the current release of z/OS. Readers of this document should have an in-depth knowledge of the configuration and procedures of the system currently installed. The system programmer reading this document might need to inform other users (operators, application programmers, other system programmers) about the migration actions they need to take for this migration.

How To Use This Document

The organization of this document is based on a logical sequence of actions required migrate to a new release of z/OS. Therefore, we suggest that you start with Chapter 1, “Migration overview” on page 1 and read sequentially through the document.

When you read this document online and you come across highlighted references to other documents or to World Wide Web sites, you can link directly to those documents or sites in order to search or browse for further information. On the Web, link by clicking on a highlighted document title or Web address. Elsewhere (CD-ROM, DVD, or z/OS BookManager® READ), either click on a highlighted document title or put the cursor on a highlighted document title and press Enter.

Where to Find More Information

Where necessary, this document references information in other documents, using shortened versions of the document title. For complete titles and order numbers of the documents for all products that are part of z/OS, see *z/OS Information Roadmap*.

Information updates on the web

- To find information about z/OS on the Web, see the z/OS internet library at:
<http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>
- For the latest information updates that have been provided in PTF cover letters and Documentation APARs for z/OS and z/OS.e, see the online document at:

<http://www.s390.ibm.com:80/bookmgr-cgi/bookmgr.cmd/BOOKS/ZIDOCMST/CCONTENTS>

This document is updated weekly and lists documentation changes before they are incorporated into z/OS publications.

PTF and documentation APAR information updates on the Web

For the latest information updates that have been provided in PTF cover letters and Documentation APARs for z/OS and z/OS.e, see the online document at:

<http://www.s390.ibm.com:80/bookmgr-cgi/bookmgr.cmd/BOOKS/ZIDOCMST/CCONTENTS>

This document is updated weekly and lists documentation changes before they are incorporated into z/OS publications.

Using LookAt to look up message explanations

LookAt is an online facility that allows you to look up explanations for most messages you encounter, as well as for some system abends and codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can access LookAt from the Internet at:

<http://www.ibm.com/eserver/zseries/zos/bkserv/lookat/>

or from anywhere in z/OS where you can access a TSO/E command line (for example, TSO/E prompt, ISPF, z/OS UNIX System Services running OMVS). You can also download code from the *z/OS Collection* (SK3T-4269) and the LookAt Web site that will allow you to access LookAt from a handheld computer (Palm Pilot VIIx suggested).

To use LookAt as a TSO/E command, you must have LookAt installed on your host system. You can obtain the LookAt code for TSO/E from a disk on your *z/OS Collection* (SK3T-4269) or from the **News** section on the LookAt Web site.

Some messages have information in more than one document. For those messages, LookAt displays a list of documents in which the message appears.

Accessing z/OS licensed documents on the Internet

z/OS licensed documentation is available on the Internet in PDF format at the IBM Resource Link™ Web site at:

<http://www.ibm.com/servers/resourceLink>

Licensed documents are available only to customers with a z/OS license. Access to these documents requires an IBM Resource Link user ID and password, and a key code. With your z/OS order you received a Memo to Licensees, (GI10-0671), that includes this key code.¹

To obtain your IBM Resource Link user ID and password, log on to:

<http://www.ibm.com/servers/resourceLink>

To register for access to the z/OS licensed documents:

1. Sign in to Resource Link using your Resource Link user ID and password.
2. Select **User Profiles** located on the left-hand navigation bar.

Note: You cannot access the z/OS licensed documents unless you have registered for access to them and received an e-mail confirmation informing you that your request has been processed.

1. z/OS.e customers received a Memo to Licensees, (GI10-0684) that includes this key code.

Printed licensed documents are not available from IBM.

You can use the PDF format on either **z/OS Licensed Product Library CD-ROM** or IBM Resource Link to print licensed documents.

Summary of changes

Summary of changes for GA22-7580-05 z/OS Version 1 Release 4

The document contains information previously presented in *z/OS MVS Migration*, GA22-7580-04, which supports z/OS Version 1 Release 3.

New information

- Information on migrating the MVS element to z/OS Release 4.
- Information is added to indicate that this document supports z/OS.e.

This document contains terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Starting with z/OS V1R2, you may notice changes in the style and structure of some content in this document—for example, headings that use uppercase for the first letter of initial words only, and procedures that have a different look and format. The changes are ongoing improvements to the consistency and retrievability of information in our documents.

Summary of changes for GA22-7580-04 as updated June 2002

The document contains information previously presented in *z/OS MVS Migration*, GA22-7580-03, which also supports z/OS Version 1 Release 3.

New information

- Information on migrating the MVS element to z/OS Release 3.

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

Summary of changes for GA22-7580-03 z/OS Version 1 Release 3

The document contains information previously presented in *z/OS MVS Migration*, GA22-7580-02, which supports z/OS Version 1 Release 2.

New information

- Information on migrating the MVS element to z/OS Release 3.

This document contains terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

We added an appendix with z/OS product accessibility information.

**Summary of changes
for GA22-7580-02
as updated December 2001**

The document contains information previously presented in *z/OS MVS Migration*, GA22-7580-01, which also supports z/OS Version 1 Release 2.

New information

- ATS STAR is a new function available in Release 2 for the handling of automatically switchable tape devices.

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

**Summary of changes
for GA22-7580-01
z/OS Version 1 Release 2**

The document contains information previously presented in *z/OS MVS Migration*, GA22-7580-00, which supports z/OS Version 1 Release 1.

New information

- Information on migrating the MVS element to z/OS Release 2.

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

**Summary of changes
for GA22-7580-00
z/OS Version 1 Release 1**

The document contains information also presented in *OS/390 MVS Conversion Notebook*, GC28-1747.

New information

- Information on migrating the MVS element to z/OS Release 1.

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

Chapter 1. Migration overview

This document will help you migrate to z/OS V1R4 of MVS from earlier releases (z/OS V1R3, V1R2, or V1R1). Your plan for migrating to a new level of MVS should include information from a variety of sources. These sources of information describe topics such as coexistence, service, hardware and software requirements, installation and migration procedures, and interface changes.

Installing your z/OS system

The following documentation provides information about installing your z/OS system. In addition to specific information about MVS, this documentation contains information about all of the z/OS elements.

- ***z/OS and z/OS.e Planning for Installation***

This document describes the installation requirements for z/OS at a system and element level. It includes hardware, software, and service requirements for both the driving and target systems. It also describes coexistence considerations and actions.

- ***z/OS Program Directory***

This document, which is provided with your z/OS product order, leads you through the installation steps for MVS and the other z/OS elements. It is the primary source of information for a CBPDO installation.

- ***ServerPac: Using the Installation Dialog***

This is the order-customized, installation document for using the ServerPac Installation method. Be sure to review the first appendix of this document. It describes data sets supplied, jobs or procedures that have been completed for you, and product status. IBM may have run jobs or made updates to PARMLIB or other system control data sets. These updates could affect your migration. This document may refer you other sources of information if there are installation tasks that could not be done during the ServerPac install.

Migration information for UNIX[®] System Services and Workload Management

Although UNIX System Services and Workload Management are both components of MVS, most of their migration information is documented in separate documents:

- For UNIX System Services migration information, see *z/OS UNIX System Services Planning*.
- For Workload Management migration information, see *z/OS MVS Planning: Workload Management*

Within this document

We've reorganized this document to a new, more task-oriented format to make your migration easier. Within this document, you can find information about the specific updates and considerations that apply to this release of MVS.

- "Developing a migration strategy" on page 3
- "Actions required for all migrations" on page 5

This section identifies tasks that must be done for any migration. These tasks are not associated with a specific new function, but must be completed to ensure successful migration to the new release.

- "Using short product names" on page 6

Migration Overview

This section identifies the short product name for each release of OS/390® and z/OS.

- Chapter 2, “Migration roadmap” on page 7

This section identifies the migration paths that are supported with the current level of MVS. It also describes the additional publications that can assist you with your migration to the current level.

- Chapter 3, “Version 1 Release 4 overview” on page 11

This section describes the specific updates that were made to MVS for the current release. For each item, this section provides an overview of the change, a description of any migration and coexistence tasks that may be considered, and where you can find more detailed information in the MVS library or other element libraries.

- Chapter 4, “Version 1 Release 3 overview” on page 27

This section describes the specific updates that were made to MVS for z/OS V1R3. For each item, this section just provides an overview of the change and any migration actions associated with it. Because this chapter was created before we reorganized this document, it is still basically in the old format.

- Chapter 5, “Version 1 Release 2 overview” on page 31

This section describes the specific updates that were made to MVS for z/OS V1R2. For each item, this section just provides an overview of the change and any migration actions associated with it. Because this chapter was created before we reorganized this document, it is still basically in the old format.

- Chapter 6, “Version 1 Release 1 overview” on page 37

This section describes the specific updates that were made to MVS for z/OS V1R1. For each item, this section just provides an overview of the change and any migration actions associated with it. Because this chapter was created before we reorganized this document, it is still basically in the old format.

- Chapter 7, “Summary of interface changes” on page 41

This section provides a summary of the changes that are made to MVS user and programming interfaces.

Terms you need to know

This section describes some terms you may need to know as you use this document.

Migration

Activities that relate to the installation of a new version or release of a program to replace an earlier level. Completion of these activities ensures that the applications and resources on your system will function correctly at the new level.

Coexistence

Two or more systems at different levels (for example, software, service or operational levels) that share resources. Coexistence includes the ability of a system to respond in the following ways to a new function that was introduced on another system with which it shares resources: ignore a new function, terminate gracefully, support a new function. The following are examples of multisystem configurations in which resource sharing can occur:

- A single system running multiple LPARs

- A single processor that is time-sliced to run different levels of the system (for example, during different times of the day)
- Two or more systems running separate processors
- A Parallel Sysplex configuration (also includes a basic sysplex)

Developing a migration strategy

The recommended steps for migrating to a new release of MVS are:

1. Become familiar with the supporting migration and installation documentation for the new release.
You should determine what updates are needed for products supplied by IBM, system libraries, and non-IBM products. Review *z/OS and z/OS.e Planning for Installation* and *z/OS Introduction and Release Guide* for information about MVS and other z/OS elements.
2. Develop a migration plan for your installation.
3. Obtain and install any required program temporary fixes (PTFs) or updated versions of the operating system.
Call the IBM Software Support Center to obtain the preventive service planning (PSP) upgrade for MVS, which provides the most current information about PTFs for MVS. Check RETAIN[®] again just before testing MVS. For information about how to request the PSP upgrade, refer to z/OS Program Directory. Although z/OS Program Directory contains a list of the required PTFs, the most current information is available from the IBM Software Support Center.
4. Install the product using z/OS Program Directory or ServerPac Installing Your Order documentation.
5. Create IPL text and stand-alone dump text in one of the following ways:
 - If you're using ServerPac, use *ServerPac: Installing Your Order*
 - If you're using CBPDO, use the *z/OS Program Directory*
 - If you're using SystemPac[®], use *SystemPac Installation Guide*
6. Contact programmers who are responsible for updating applications at your installation. Verify that your installation's applications will continue to run, and, if necessary, make changes to ensure compatibility with the new release.
7. Examine *z/OS MVS Planning: Workload Management* for WLM-specific migration actions.
8. Examine *z/OS UNIX System Services Planning* for UNIX System Services specific migration actions.

Migration Overview

9. Examine changed SMF records and assess the need to change how you use them. See “SMF records” on page 54.
10. Review the changes to MVS commands, RACF® access authorities, and resource names described in *z/OS MVS Planning: Operations*.
11. See “Actions required for all migrations” on page 5.
12. Use the new release before initializing major new function.
13. If necessary, customize the new function for your installation.
14. Exercise the new functions now available on this member.

Key areas of MVS processing

The following list shows how we define some of the key areas in MVS processing that are often affected by migration. These terms are used throughout this document to describe how new functions affect migration.

Application development	Application development programmers must be aware of new functions introduced in a new release of z/OS. To ensure that existing programs run as before, your application programmers need to know about any changes in interfaces. This document provides an overview of the changes that might affect existing application programs.
Auditing	Typically, auditors are responsible for ensuring proper access control and accountability for their installation. This document identifies any changes to security options, audit records, and report generation utilities.
Customization	To meet the specific requirements of your installation, you can customize MVS functions and interfaces to take advantage of new function after installation. For example, you can tailor MVS through SYS1.PARMLIB parameters, couple data sets, and installation exit routines.
Operations	A new z/OS release might introduce changes to its operating characteristics, such as new or changed commands.
Problem determination and diagnosis	A new z/OS release might introduce changes to the way you do problem determination and diagnosis.
Security	Security administrators must be aware of how changes introduced by a new product release can affect an installation's data processing resources.

Changes to real and virtual storage requirements, performance, security, and integrity are of interest to security administrators or to system programmers who make decisions about the system resources used with a program.

Reviewing changes to MVS interfaces

When defining your installation's migration plan, also consider that MVS interfaces may also be affected by the new or changed functions that are introduced in this release. These interfaces include:

- SYS1.PARMLIB members
- SYS1.PROCLIB members
- SYS1.SAMPLIB members
- System commands
- IPCS commands
- SMF records
- Macros
- Callable services
- C language interfaces
- Installation exits
- Control blocks

See Chapter 7, "Summary of interface changes" on page 41 for complete information.

Actions required for all migrations

The following sections describe common activities and considerations that are typically required (or should be considered) whenever you migrate from a previous release of MVS to the current release.

Diagnosis in a multi-system environment

Because diagnostic control blocks usually change every release, you can get unpredictable results (for example abend 0C4) when you process and format diagnostic data such as dumps, logrec records, and trace data sets on a system running on an earlier release. To avoid this problem, you must code a steplib where the new formatting routines (CLISTs) are on volume SY1PAK:

```
//*== TSO/E LOGON PROCEDURE FOR RUNNING IPCS USING SYS1.MIGLIB ==*
//IPCSPROC EXEC PGM=IKJEFT01,DYNAMNBR=70,REGION=3072K
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR, Steplib for SYS1.MIGLIB
// UNIT=3390,VOL=SER=SY1PAK defining alternate system
//SYSPROC DD DSN=COMPCTR.CLIST,DISP=SHR Installation CLISTs
// DD DSN=ISR.V210.ISRCLIB,DISP=SHR ISPF Version 2 CLISTs
// DD DSN=SYS1.SBLSCLI0,DISP=SHR, IPCS CLISTs
// UNIT=3390,VOL=SER=SY1PAK define alternate system
:
```

For example, if you are using EREP, and the new formatting routines are on volume SY1PAK, your EREP job step might look as follows:

```
//EREPDALY EXEC PGM=IFCEREPI,PARM=('HIST,ACC=Y,SYSUM')
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
// UNIT=3390,VOL=SER=SY1PAK
//ACCIN DD DSN=SYSPLEX.LOGREC.ALLRECS,
// SUBSYS=(LOGR,IFBSEXIT,, 'DEVICESTATS,LASTRUN'
// DCB=(RECFM=VB,BLKSIZE=4000)
//ACCDEV DD DSN=EREP.HISTORY,
// DISP=(NEW,CATLG),
// DCB=(RECFM=VB,BLKSIZE=4000),
```

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```
//          UNIT=SYSDA,SPACE=(CYL,(25,5))
//SERLOG   DD DUMMY
//DIRECTWK DD UNIT=SYSDA,SPACE=(CYL,15,,CONTIG)
//TOURIST  DD SYSOUT=A,DCB=BLKSIZE=133
//EREPT    DD SYSOUT=A,DCB=BLKSIZE=133
//SYSABEND DD SYSOUT=A
//SYSIN    DD DUMMY
/*
```

For a complete example, see the description of how to run IPCS on another system in *z/OS MVS IPCS Customization*.

Using short product names

Besides the official product name, version, release, modification level and the FMID for z/OS and OS/390 systems, there is also a short product name for each release. The short product name for a system is contained in the CVTPRODN field of the CVT data area.

The following chart shows the short product name for each release of OS/390 and z/OS:

Table 1. Release names, FMIDs, and short product names

Release number	FMID	Short product name
z/OS R4	HBB7707	SP7.0.4
z/OS R3	HBB7706	SP7.0.3
z/OS R2	HBB7705	SP7.0.2
z/OS R1	JBB7713	SP7.0.1
OS/390 R10	HBB7703	SP6.1.0
OS/390 R9	JBB6609	SP6.0.9
OS/390 R8	HBB6608	SP6.0.8
OS/390 R7	JBB6607	SP6.0.7
OS/390 R6	HBB6606	SP6.0.6
OS/390 R5	HBB6605	SP6.0.5
OS/390 R4	JBB6604	SP6.0.4
OS/390 R3	HBB6603	SP6.0.3
OS/390 R2	JBB6602	SP6.0.2
OS/390 R1	HBB6601	SP6.0.1
MVS/ESA™ SP5.2.2	JBB5522	SP5.2.2

The short product name can be useful in interpreting SMF records – field SMF00SL in SMF record type 0 contains the short product name, and the chart above can help you to figure out the release level of the system issuing the SMF record. Note however, that this information is maintained only for compatibility reasons and should not be used for programming. For programming purposes, use the feature bits in the CVTOSLVL field of the CVT data area to determine if you are running on a release which supports the function you are interested in using. For the true software product name version, release, and modification level information, use the ECVTPNAM, ECVTPVER, ECVTPREL, ECVTPMOD fields in the ECVT data area.

Chapter 2. Migration roadmap

This section describes the migration paths that are supported by the current release of MVS. Select the roadmap that applies to your migration path and review the changes for the associated releases. Note that typically z/OS supports a migration path for n-3, where n is the current release. That means we're covering the following:

- "z/OS V1R3 to V1R4 summary"
- "z/OS V1R2 to V1R4 summary"
- "z/OS V1R1 to V1R4 summary" on page 8

z/OS V1R3 to V1R4 summary

Table 2 guides you in a migration path from z/OS V1R3 to z/OS V1R4:

Table 2. Migrating from z/OS V1R3 to V1R4

For information about:	Refer to:
<i>Changes introduced in z/OS V1R4:</i>	
Automatic restart manager users must reformat their couple data set	12
New example for determining your CPC type, model, and serial number	14
Distributed byte range lock manager (BRLM) support	17
Shared HFS updates	15
Support for additional installation defined static system symbols	18
Resource recovery services subordinate failure notification	19
Batching cache structure operations	20
Default boxing of devices with hot I/O, terminal, or hung interface conditions	21
Service aids enhancements	23
New set of callable cell pool services for AMODE 64	24
UNIX System Services updates	25
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z/OS V1R2 to V1R4 summary

Table 3 guides you in a migration path from z/OS V1R2 to z/OS V1R4:

Table 3. Migrating from z/OS V1R2 to V1R4

For information about:	Refer to:
<i>Changes introduced in z/OS V1R4:</i>	
Automatic restart manager users must reformat their couple data set	12
New example for determining your CPC type, model, and serial number	14
Distributed byte range lock manager (BRLM) support	17
Shared HFS updates	15

Migration roadmap

Table 3. Migrating from z/OS V1R2 to V1R4 (continued)

For information about:	Refer to:
Support for additional installation defined static system symbols	18
Resource recovery services subordinate failure notification	19
Batching cache structure operations	20
Default boxing of devices with hot I/O, terminal, or hung interface conditions	21
Service aids enhancements	23
New set of callable cell pool services for AMODE 64	24
UNIX System Services updates	25
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Changes introduced in z/OS V1R3:	
System Logger enhancements	27
TSO/E dynamic broadcast support	28
Removal of Workload Management compatibility mode	28
64-bit virtual addressing: Additional services supported	29
Program Management support for 64-bit virtual addressing	29
Program Management COMPAT binder option default change	30
Running z/OS on the z800 server	30
Changes introduced in z/OS V1R2:	
64-bit virtual addressing	31
Command flooding	32
System-managed duplexing rebuild	33
System logger exploitation of CF duplexing rebuild	33
Wildcard support for Global Resource Serialization resource name lists	34
Workload Management enhancements	34
Recoverable Resource Management Services (RRMS) enhancements	34
Open data set relief	35
Service aids enhancements	35
Automatic tape switching	36
SMF support for sub-capacity pricing	30

z/OS V1R1 to V1R4 summary

Table 4 guides you in a migration path from z/OS V1R1 to z/OS V1R4:

Table 4. Migrating from z/OS V1R1 to V1R4

For information about:	Refer to:
Changes introduced in z/OS V1R4:	
Automatic restart manager users must reformat their couple data set	12

Table 4. Migrating from z/OS V1R1 to V1R4 (continued)

For information about:	Refer to:
New example for determining your CPC type, model, and serial number	14
Distributed byte range lock manager (BRLM) support	17
Shared HFS updates	15
Support for additional installation defined static system symbols	18
Resource recovery services subordinate failure notification	19
Batching cache structure operations	20
Default boxing of devices with hot I/O, terminal, or hung interface conditions	21
Service aids enhancements	23
New set of callable cell pool services for AMODE 64	24
UNIX System Services updates	25
Workload Management updates	26
Changes introduced in z/OS V1R3:	
System Logger enhancements	27
TSO/E dynamic broadcast support	28
Removal of Workload Management compatibility mode	28
64-bit virtual addressing: Additional services supported	29
Program Management support for 64-bit virtual addressing	29
Program Management COMPAT binder option default change	30
SMF support for sub-capacity pricing	30
Running z/OS on the z800 server	30
Changes introduced in z/OS V1R2:	
64-bit virtual addressing	31
Command flooding	32
System-managed duplexing rebuild	33
System logger exploitation of CF duplexing rebuild	33
Wildcard support for Global Resource Serialization resource name lists	34
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Open data set relief	35
Service aids enhancements	35
Automatic tape switching	36
SMF support for sub-capacity pricing	30
Changes introduced in z/OS V1R1:	
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Migration roadmap

Table 4. Migrating from z/OS V1R1 to V1R4 (continued)

For information about:	Refer to:
Changes to CVT and ECVT control blocks	40

Chapter 3. Version 1 Release 4 overview

Release summary

Table 10 on page 31 summarizes the updates that have been introduced to MVS in MVS Version 1 Release 4. For more information, refer to the detailed section for each item.

Table 5. Summary of MVS Updates for MVS Version 1 Release 4

For Information About:	Refer to:
Automatic restart manager users must reformat their couple data set	12
New example for determining your CPC type, model, and serial number	14
Shared HFS updates	15
Distributed byte range lock manager (BRLM) support	17
Support for additional installation defined static system symbols	18
Resource recovery services subordinate failure notification	19
Batching cache structure operations	20
Default boxing of devices with hot I/O, terminal, or hung interface conditions	21
Service aids enhancements	23
New set of callable cell pool services for AMODE 64	24
UNIX System Services updates	25
Workload Management updates	26

Automatic restart manager users must reformat their couple data set

Description

The automatic restart manager couple data set is expanding for z/OS V1R4 to accommodate the larger symbol table associated with the increased static symbol support. (See “Support for additional installation defined static system symbols” on page 18.) If you are using the automatic restart manager on your existing sysplex, you must reformat a primary and alternate automatic restart manager couple data set to the z/OS V1R4 level before IPLing the V1R4 system.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Administration	The automatic restart manager couple data set expands in size to accommodate the larger symbol table associated with the increased number of static system symbols supported.
Application development	None
Auditing	None
Customization	None
Operations	None
Security	None
Interfaces	None

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence considerations associated with this support – z/OS V1R4 and pre-V1R4 systems can coexist in a sysplex with a z/OS V1R4 level automatic restart manager couple data set.

Migration tasks

Review the following high-level migration tasks to better understand the impacts to your environment.

Required tasks apply to all installations enabling the function. **Optional** tasks apply to only specified operating environments or to situations where there is more than one way to set up or enable the function. For more details on the procedures associated with a task, see the reference listed.

Table 6. Migration tasks for automatic restart manager users

Task	Condition	Procedure reference
<p>If you are using the automatic restart manager on your existing sysplex, you must do the following before you IPL a z/OS V1R4 system that exploits automatic restart manager:</p> <ol style="list-style-type: none"> 1. Using the z/OS V1R4 IXCL1DSU utility, reformat a primary and alternate automatic restart manager couple data set to the version 2 level. 2. Issue the SETXCF COUPLE system command to enable the version 2 couple data set as the alternate couple data set and then use the SETXCF PSWITCH system command to switch the alternate couple data set to the primary couple data set. 	Required	<i>z/OS MVS Setting Up a Sysplex</i>
<p>If you want to start using automatic restart manager for the first time on a z/OS V1R4 system, you must format a primary and alternate automatic restart manager couple data set on that V1R4 system.</p>	Optional	<i>z/OS MVS Setting Up a Sysplex</i>

For more information

For more detailed information about reformatting the automatic restart manager couple data set, refer to *z/OS MVS Setting Up a Sysplex*.

New example for determining your CPC type, model, and serial number

Description

Now there is a new example showing how to determine your system's CPC type, model, and serial number. This was formulated for use on the SYSPLEX control statement in the IFAURP usage report program for usage based pricing. See *z/OS MVS Product Management* for the steps for determining the CPC type, model, and serial number for your system.

What this change affects

This support may affect the following areas of processing:

Area	Considerations
Application development	None
Auditing	None
Customization	New example for use in usage based pricing program.
Operations	None
Security	None
Interfaces	None

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence considerations associated with this support.

Migration tasks

There are no migration tasks related to this function.

For more information

For more detailed information about this support, refer to *z/OS MVS Product Management*.

Shared HFS updates

Description

UNIX System Services has updated the following shared HFS support for z/OS V1R4:

- The type BPXMCDS couple data set has changed to hold additional data — you must reformat the OMVS couple data set (DATA TYPE(BPXMCDS)). to version 2 level using the V1R4 level of SYS1.MIGLIB.
- The size of the PARM parameter on the MOUNT, ROOT, and FILESYSTYPE statements in the BPXPRMxx parmlib member has been reduced to 500 characters.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Application development	None
Auditing	None
Customization	The OMVS couple data set (DATA TYPE(BPXMCDS)) expands in size. The size of the PARM parameter on the MOUNT, ROOT, and FILESYSTYPE statements in the BPXPRMxx member has been reduced to 500 characters
Operations	None
Security	None
Interfaces	None

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence considerations associated with this support – z/OS V1R4 and pre-V1R4 systems can coexist in a sysplex with a version 2 format OMVS couple data set (DATA TYPE(BPXMCDS)).

There are some fallback considerations associated with this support – Once you PSWITCH the new version 2 OMVS couple data set (DATA TYPE(BPXMCDS)) as the primary couple data set, you cannot then fallback to the version 1 couple data set by enabling it as the alternate and PSWITCHing to it as the primary couple data set. You cannot do this because the record length of the version 1 couple data set is smaller than the version 2 couple data set. If you try to make the version 1 couple data set the primary, XCF will fail the PSWITCH. The only way to fallback to the version 1 couple data set as the primary is to bring down all the systems in the sysplex and then re-initialize the sysplex, specifying the version 1 couple data set as the primary couple data set.

Migration tasks

Review the following high-level migration tasks to better understand the impacts to your environment.

Shared HFS update

Required tasks apply to all installations enabling the function. **Optional** tasks apply to only specified operating environments or to situations where there is more than one way to set up or enable the function. For more details on the procedures associated with a task, see the reference listed.

Table 7. Migration tasks for shared HFS updates

Task	Condition	Procedure reference
<p>You must reformat the OMVS couple data set (DATA TYPE(BPXMCDs)) to the new version 2 format. You can do this in one of the following ways:</p> <ul style="list-style-type: none"> Reformat the (DATA TYPE(BPXMCDs)) OMVS couple data set before you IPL your z/OS V1R4 system. You can do this from a pre-V1R4 system, from OS/390 R10 to z/OS V1R3. When you reformat the couple data set you must make sure to steplib to a V1R4 SYS1.MIGLIB. You can use sample BPXISCDS in SYS1.SAMPLIB to define the version 2 OMVS couple data set, making sure to steplib to a V1R4 SYS1.MIGLIB. After formatting the couple data set, use the SETXCF COUPLE system command to enable the version 2 couple data set as the alternate couple data set and then use the SETXCF PSWITCH system command to switch the alternate couple data set to the primary couple data set. You can also reformat the OMVS couple data set (DATA TYPE(BPXMCDs)) to the version 2 format from a V1R4 system, using BPXISCDS in SYS1.SAMPLIB. However, note that when you IPL a V1R4 system before reformatting the TYPE(BPXMCDs) couple data set, UNIX System Services initialization processing will be delayed until a BPXMCDs couple data set formatted at the version 2 level is made available as the primary couple data set. The system will issue messages BPXF226E and BPXF214E to indicate that UNIX System Services initialization has been delayed. <p>After you define the new version 2 OMVS couple data set on a V1R4 system, you must enable it as the primary couple data set as follows:</p> <ol style="list-style-type: none"> If there is currently no primary OMVS couple data set (DATA TYPE(BPXMCDs)) enabled in the sysplex, use the SETXCF COUPLE system command to identify one. If there is already a primary OMVS couple data set (DATA TYPE(BPXMCDs)) couple data set enabled in the sysplex, use the SETXCF COUPLE system command to enable the version 2 couple data set as the alternate couple data set and then use the SETXCF PSWITCH system command to switch the alternate couple data set to the primary couple data set. <p>UNIX System Services initialization will resume when the version 2 OMVS couple data set (DATA TYPE(BPXMCDs)) is enabled as primary.</p>	Required	<i>z/OS MVS Setting Up a Sysplex</i>
<p>Verify the current OMVS couple data set (DATA TYPE(BPXMCDs)) using the MODIFY BPXOINIT,FILESYS=DISPLAY system command.</p>	Optional	<i>z/OS MVS System Commands</i>

Distributed byte range lock manager (BRLM) support

Description

For z/OS V1R4, UNIX System Services now supports distributed byte range lock manager (BRLM), allowing you to set up BRLM so that every system in the sysplex is started with BRLM. By default, the lock manager is initialized on only one system in the sysplex. For complete details, see *z/OS UNIX System Services Planning*. In this section, we discuss only the MVS interfaces affected.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Application development	None
Auditing	None
Customization	New keyword, DISTBRLM, for formatting the OMVS couple data set (DATA TYPE(BPXMCDs)).
Operations	None
Security	None
Interfaces	None

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

Distributed BRLM is not the default, so it must be installed and enabled on each system in the sysplex before you can use it. In addition, you must reformat the OMVS couple data set (DATA TYPE(BPXMCDs)) with the new DISTBRLM parameter. Distributed BRLM support is included in z/OS V1R4 and V1R3, while for lower levels systems down to OS/390 R9, you can apply the appropriate fix for APAR OW52293 to install distributed BRLM support. For the steps to set up distributed BRLM on every system in the sysplex see *z/OS UNIX System Services Planning*.

Once you've activated distributed BRLM on your sysplex, you cannot go back to centralized BRLM unless you restore the sysplex to the state it was in before distributed BRLM was set up. This requires resetting the couple data set, followed by a sysplex-wide IPL.

Migration tasks

There are no migration actions related to this function.

For more information

For more detailed information about this support, refer to the following publications:

- *z/OS MVS Setting Up a Sysplex*
- *z/OS UNIX System Services Planning*

Support for additional installation defined static system symbols

Description

MVS now provides support for defining additional installation defined static system symbols (in addition to the system symbols that MVS provides) for each system in a multisystem environment. The size of the symbol table has increased to guarantee you the ability to define 800 symbols. Previously, the limit was 99.

Apart from this increased size, the symbol table functions as it did previously.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Administration	The automatic restart manager couple data set expands in size to accommodate the larger symbol table associated with the increased number of static system symbols supported. See Table 6 on page 13
Application development	None
Auditing	None
Customization	Changes to the IEASYMxx member.
Operations	None
Security	None
Interfaces	See “Summary of Changes to SYS1.PARMLIB” on page 42.

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence considerations associated with this support – z/OS V1R4 and pre-V1R4 systems can coexist in a sysplex with a z/OS V1R4 level automatic restart manager couple data set.

Migration tasks

Review the high-level migration tasks in Table 6 on page 13.

Required tasks apply to all installations enabling the function. **Optional** tasks apply to only specified operating environments or to situations where there is more than one way to set up or enable the function. For more details on the procedures associated with a task, see the reference listed.

For more information

For more detailed information about this support, refer to the following publications:

- *z/OS MVS Setting Up a Sysplex*
- *z/OS MVS Initialization and Tuning Reference*

Resource recovery services subordinate failure notification

Description

For z/OS V1R4, Resource recovery services (RRS) supports a new optional exit (SUBORDINATE_FAILED) designed to notify resource managers interested in the coordinator UR on a coordinator system about the following kinds of failure:

- When RRS or a resource manager (such as IMS™) fails on its subordinate system while the sysplex cascaded transaction is in-flight.
- The subordinate system itself fails while the sysplex cascaded transaction is in-flight.
- A subordinate syncpoint ends abnormally (task termination)

The exit receives control for the coordinator UR, notifying resource managers interested in the coordinator UR that have the exit defined about the failure. This gives the interested resource managers a chance to take appropriate action (such as triggering a backout for the transaction or sending the outcome to its external coordinator) for the sysplex cascaded transaction.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Application development	New SUBORDINATE_FAILED exit routine.
Auditing	None
Customization	None
Operations	None
Security	None
Interfaces	See “Control Blocks” on page 69 and <i>z/OS MVS Programming: Resource Recovery</i>

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There is a coexistence considerations associated with this new function – you cannot use the new subordinate failure notification function until all the systems in the sysplex are at the V1R4 level.

Migration tasks

There are no migration tasks related to this function.

For more information

For more detailed information about this support, refer to the following publications:

- *z/OS MVS Programming: Resource Recovery* for information on implementing the new SUBORDINATE_FAILED exit.
- See “Control Blocks” on page 69 for changes to the ATTRASM control block related to this function.

Batching cache structure operations

Description

Enhancements to the IXLCACHE service allow you to batch cache structure operations, reducing the number of commands sent to the coupling facility. There are three new request types:

- IXLCACHE REQUEST=WRITE_DATALIST lets you write a batch of data with one request, which can reduce the number of writes issued in a high-update environment, such as a query workload.
- IXLCACHE REQUEST=CASTOUT_DATALIST lets you cast out a batch of data with one request, which can improve castout processing for programs using a staging buffer that resides outside of the local cache.
- IXLCACHE REQUEST=CROSS_INVALLIST lets you cross invalidate a batch of data with one request, which can improve the performance of local cache buffer invalidation when the list of entry names cannot be mapped to a single name mask.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Application development	Using the new IXLCACHE service request types require a system at the z/OS V1R4 level and a connection to a coupling facility where the coupling facility control code (CFCC) is CFLEVEL=12 or higher.
Auditing	None
Customization	None
Operations	None
Security	None
Interfaces	"Summary of Changes to Macros" on page 56

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence considerations associated with this support. You can use the new IXLCACHE service request types from a V1R4 system in a mixed-sysplex (where V1R4 and pre-V1R4 systems coexist). However, you *cannot* use the new request types on a pre-V1R4 system or on a system connected to a coupling facility with a CFCC level lower than CFLEVEL=12.

Migration tasks

There are no migration actions associated with this support.

For more information

For detailed information about the new IXLCACHE service request types, see *z/OS MVS Programming: Sysplex Services Reference*.

Default boxing of devices with hot I/O, terminal, or hung interface conditions

Description

z/OS V1R4 introduces a new default setting for the BOX_LP (box if last path) statement on the HOTIO and TERMINAL parameters of the IECIOSxx parmlib member. By default, all device classes (DASD,TAPE,UREC,COMM,CTC,GRAF,and CHAR) now specify the BOX_LP option. When this option is specified for a device class, devices in that class are boxed instead of performing channel path recovery when all of the following conditions are true:

- The device is defined on the CHPID being recovered.
- Either all of the device's paths are undergoing recovery or this is the only path to the device.
- The device is currently reserved or assigned.

IBM introduced this new support because channel path recovery to the last or only path to a reserved device can cause disruption to systems associated with the device. If messages issued during recovery processing are not responded to, system wait state code X'062' can occur. IBM recommends that you take the default setting for boxing of devices because it is the safest and least disruptive setting.

Prior to z/OS V1R4, processing was not performed for a device class unless the BOX_LP parameter was explicitly coded. Now however, IBM recommends that you simply take the new default and *do not* specify any value for BOX_LP parameter.

For customers who had no value specified for BOX_LP, this new default means that you might see a change in device recovery processing in V1R4. Before V1R4, if you had not specified a value for the BOX_LP parameter, no devices were boxed for hot I/O, terminal or hung interface conditions, even if the system must use the last path available to the device for recovery processing. Instead, the devices went through channel path recovery. Now, however, if you do not specify a value for BOX_LP you'll get the new default boxing for devices under the conditions listed above.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Application development	None
Auditing	None
Customization	There is now a default of ALL for the BOX_LP statement on the HOTIO and TERMINAL parameters, specifying that all device classes are to be boxed when the appropriate conditions exist.
Operations	None
Security	None
Interfaces	"Summary of Changes to SYS1.PARMLIB" on page 42

Dependencies

There are no software or functional dependencies associated with this support.

Default device boxing

Coexistence and fallback considerations

There are no coexistence considerations associated with this support.

Migration tasks

Review the following high-level migration tasks to better understand the impacts to your environment.

Required tasks apply to all installations enabling the function. **Optional** tasks apply to only specified operating environments or to situations where there is more than one way to set up or enable the function. For more details on the procedures associated with a task, see the reference listed.

Table 8. Migration tasks for default device boxing

Task	Condition	Procedure reference
Examine IECIOSxx parmlib member to evaluate current setting of BOX_LP statement on the HOTIO and TERMINAL parameters. The new default is BOX_LP=(ALL), which means that devices in all classes are to be boxed when all the appropriate conditions exist. IBM recommends simply taking the default for BOX_LP, rather than specifying a value for it.	Optional	<i>z/OS MVS Initialization and Tuning Reference</i>

Service aids enhancements

Description

For z/OS V1R4, IBM made the following service aids enhancements:

- IPCS split-opcode support upgrades the OP CODE IPCS subcommand and dialog primary command to display the mnemonics for multi-byte split operation codes introduced as part of zArchitecture (such as E3, EB, or ED) when only the first byte or two is entered.
- New IPCS COPYCAPD subcommand displays information about all the captured dumps present in a standalone dump. In addition both the COPYCAPD and COPYDUMP subcommands both support dynamic allocation of BLKSIZE in logical record length, using the dynamic allocation equivalents of the AVGREC JCL keyword.
- New IPCS LISTTOD subcommand converts TOD clock values to legible time stamps.
- Support for writing of a CTRACE data set from unauthorized code, such as ported C/C++ products.

What this change affects

This support may affect the following areas of processing.

Area	Considerations
Application development	None
Auditing	None
Customization	None
Operations	None
Problem determination and diagnosis	New IPCS OP CODE, COPYCAPD, and LISTTOD subcommands.
Security	None
Interfaces	See "IPCS Subcommands" on page 76

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence considerations associated with this support.

Migration tasks

There are no migration tasks related to this function.

For more information

For more detailed information about this support, See:

- *z/OS MVS IPCS Commands* for the IPCS COPYCAPD , LISTTOD, and OP CODE subcommands
- *z/OS MVS IPCS Customization* for the external CTRACE writer support.

New set of callable cell pool services for AMODE 64

Description

In z/OS V1R4, there is a new set of callable cell pool services for use when running AMODE 64 to exploit 64-bit addressing. Your system's AMODE will determine which set of services to use, as follows:

- When running AMODE 24 or AMODE 31, use the CSRPxxx services.
- When running AMODE 64, use the CSRC4 xxx services.

What this change affects

This support may affect the following areas of processing:

Area	Considerations
Application development	New CSRC4xxx cell pool services available for AMODE 64.
Auditing	None
Customization	None
Operations	None
Security	None
Interfaces	"Summary of Changes to Macros" on page 56

Dependencies

There are no software or functional dependencies associated with this support.

Coexistence and fallback considerations

There are no coexistence or fallback considerations associated with this support.

Migration tasks

There are no migration tasks associated with this support. Review the following high-level migration tasks to better understand the impacts to your environment.

For more information

For more detailed information about this support, refer to the following publications:

- *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
- *z/OS MVS Programming: Assembler Services Guide*

UNIX System Services updates

Description

UNIX System Services made numerous updates for z/OS V1R4. In this section, we cover only MVS interface changes related to UNIX System Services updates. For complete information about new UNIX System Services function and migration, see *z/OS UNIX System Services Planning*.

See also “Shared HFS updates” on page 15 and “Distributed byte range lock manager (BRLM) support” on page 17

Workload Management updates

Description

Workload Management made numerous updates for z/OS V1R4. For information about new function and migration actions for Workload Management, see *z/OS MVS Planning: Workload Management*.

For changes to MVS interfaces related to Workload Management updates, see the following:

- “SMF records” on page 54
- “Summary of Changes to Macros” on page 56
- “Control Blocks” on page 69
- “IPCS Subcommands” on page 76

Chapter 4. Version 1 Release 3 overview

The following sections describe the new and changed MVS functions that are introduced for z/OS Version 1 Release 3. The information about each item includes:

- Description
- Summary of the MVS tasks or interfaces that might be affected
- Coexistence considerations, if any, that are associated with the item
- Migration procedures, if any, that are associated with the item
- References to other publications that contain additional detailed information

Release summary

Table 9 summarizes the updates that have been introduced to MVS in z/OS Version 1 Release3. For more information, refer to the detailed section for each item.

Table 9. Summary of MVS updates for z/OS Version 1 Release 3

For Information About:	Refer to:
System Logger enhancements	27
TSO/E dynamic broadcast support	28
Removal of Workload Management compatibility mode	28
64-bit virtual addressing: Additional services supported	29
Program Management support for 64-bit virtual addressing	29
Program Management COMPAT binder option default change	30
SMF support for sub-capacity pricing	30
Running z/OS on the z800 server	30

System Logger enhancements

System logger provides the following enhancements:

- You can now dynamically change policy attributes for log streams and structures without having to disconnect all the applications and subsystems connected to the log stream. This includes changing structure definitions in the LOGR couple data set without having to delete and redefine associated resources (staging data sets, for example).
- System logger now allows more flexible high-level qualifiers for log stream data sets. The new EHLQ (extended high-level qualifier) parameter for log stream definitions in the LOGR couple data set allows you to use more than one qualifier for log stream high-level qualifiers.

For more information, see *z/OS MVS Setting Up a Sysplex*.

Migration action: You can use the V1R3 system logger enhancements on a z/OS V1R3 system when the primary LOGR couple data set is at least at the z/OS V1R2 format level. For details on formatting the LOGR couple data set, see the description of the LOGR parameters for the format utility in *z/OS MVS Setting Up a Sysplex*. Note that there are release coexistence limitations when a new LOGR couple data set is brought into a sysplex. In addition, since connections to logstreams with the EHLQ attribute are not supported on pre-z/OS V1R3 systems,

you should consider not using the EHLQ parameter until all the systems in your sysplex are running at the z/OS V1R3 level and you are sure that you will not need to fall back to z/OS V1R2.

TSO/E dynamic broadcast support

The TSO/E broadcast data set contains notices and messages for TSO/E users on z/OS. TSO/E will now allow more flexible broadcast data set processing:

- You no longer have to call the broadcast data set SYS1.BROADCAST. You can specify the broadcast data set name that you wish to use on the new BROADCAST parameter on the SEND statement of the IKJTSOxx parmlib member.
- You can switch to a different broadcast data set dynamically without an IPL.
- The entry for the broadcast data set is no longer included in master JCL. Instead, TSO/E allocates the broadcast data during IPL.
- The TSO/E LOGON function now allows you to log on even if the broadcast data set has not been allocated.
- You can specify the IKJTSOxx parmlib member on the IPL parameters. This support also allows the IKJTSOxx parmlib member to be specified (SET™) and displayed (DISPLAY) using MVS system commands. Prior to z/OS Release 3, you could only display the IKJTSOxx parmlib member by using the TSO/E PARMLIB command.

For more information see:

- *z/OS MVS Initialization and Tuning Reference*
- *z/OS TSO/E General Information*

Migration actions:

- In the IKJTSOxx parmlib member, TSO/E now allows you to specify a broadcast data set other than SYS1.BROADCAST. You can specify the broadcast data set on the BROADCAST parameter of the SEND statement. TSO/E will default to SYS1.BROADCAST, so no action is required unless you want to use a different data set.
- You no longer have to point to the broadcast data set in the MSTJCLxx member. Instead, you can specify the broadcast data set in the IKJTSOxx member if you want to use a broadcast data set other than SYS1.BROADCAST. The master JCL will no longer allocate the broadcast data set. Instead, TSO/E will use either the default (SYS1.BROADCAST) or the BROADCAST parameter in IKJTSOxx to allocate the broadcast data set.

Removal of Workload Management compatibility mode

Since its introduction in MVS 5.1.0, Workload Management could be run in one of two modes, compatibility mode and goal mode. Beginning with z/OS V1R3, Workload Management will run only in goal mode. Accordingly, all systems at the z/OS V1R3 level or higher will now IPL in Workload Management goal mode, using either the existing service definition, or a default service definition if one does not exist yet. Once IPLed, customers can then define their own couple data set, modify their service definition, install it, and then activate a policy.

For more information, see *z/OS MVS Planning: Workload Management*.

Migration actions:

- Because Workload Management compatibility mode has been removed for z/OS Release 3, the system ignores parmlib members IEAICSxx and IEAIPSxx.

- Examine the IEASYSxx parmlib member and take action as appropriate:
 - The ICS= and IPS= parameters, previously used for WLM compatibility mode, will be ignored by the system.
 - You can now specify optional parameter, LICENSE=, in IEASYSxx to specify which operating system is running. For z/OS, you do not need to specify this parameter – it will default to the proper value when running z/OS.
 - You can now optionally specify the particular IKJTSOnn member you want to use on the IKJTSO= parameter in IEASYSxx. The default is IKJTSO00. No change is required unless you want to use a member other than IKJTSO00.
- In the SCHEDxx parmlib member, the PGMNAME(name) statement with PRIV keyword, previously used only in WLM compatibility mode, is no longer valid, and will be ignored by the system.

64-bit virtual addressing: Additional services supported

For z/OS V1R3, there are now additional authorized and unauthorized services allowing you to do virtual 64-bit addressing.

For more information, see the following books:

- For unauthorized services, see:
 - *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
 - *z/OS MVS Programming: Assembler Services Reference IAR-XCT*
 -
- For authorized services, see:
 - *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
 - *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
 - *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*
 - *z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO*

Program Management support for 64-bit virtual addressing

Program Management now provides support for 64-bit virtual addressing, including:

- AMODE(64) as a binder option
- AMODE(64) in ESD records
- 8-byte adcons

Program management provides 64-bit virtual addressing support for the following on **input**:

- load modules
- PO4 format program objects
- GOFF
- old-style object modules (OBJ). Note that this does not include support for XOBJ modules.

Program management provides 64-bit virtual addressing support for the following on **output**:

- load modules
- PO4 format program objects
- binder load function

For more information, see *z/OS MVS Program Management: User's Guide and Reference* and *z/OS MVS Program Management: Advanced Facilities*.

Program Management COMPAT binder option default change

The default for the Program Management COMPAT binder option, which lets you specify the compatibility level of the binder, has changed from CURRENT to the new option, MIN. The old default, CURRENT, specifies that the binder output is defined for the current level of the binder. For example, for a system running at the z/OS V1R3 level that specifies COMPAT=CURRENT will get the z/OS V1R3 PM4 program object format. The new default, MIN, specifies that the binder will choose the earliest format supporting all of the binder features in use. This means that a system at the z/OS V1R3 level specifying or defaulting to COMPAT=MIN will get the program object format appropriate to the binder features in use, rather than the current one.

For complete information on the COMPAT binder option default, see the *z/OS MVS Program Management: User's Guide and Reference*.

Migration actions:

- Take a look at your COMPAT binder option, and make sure you have specified the right option for the binder output you want.
- When you select your program object format on the COMPAT binder option, you must take into account where the output program object will run – program objects can only run on a system that supports that program object format or higher. For example, if you decide to create program objects in PM4 format (by specifying either COMPAT=CURRENT, COMPAT=PM4 or COMPAT=MIN and exploiting PM4 functions in your code), the resulting program object must run on a z/OS Release 3 or higher system. See *z/OS MVS Program Management: User's Guide and Reference* for how to specify program object format on the COMPAT binder option.

SMF support for sub-capacity pricing

With z/OS Release 3, customers can set a new SMFPRMxx parameter, MULCFUNC or NOMULCFUNC, which allows an installation to specify whether their IFAUSAGE users must specify the REQUEST=FUNCTIONxxx parameter. MULCFUNC, which is the default, means that users of IFAUSAGE (who register and deregister) must specify REQUEST=FUNCTIONxxx requests. NOMULCFUNC means that users of IFAUSAGE do not need to use the FUNCTIONxxx requests. Specifying NOMULCFUNC can help people using the Sub-Capacity Reporting Tool to limit the volume of the SMF records.

For more information, see the following Sub-Capacity Reporting Tool Web site:

http://www.ibm.com/servers/eserver/zseries/wlc_lm/scrt.html

Running z/OS on the z800 server

Migration action: In order to run z/OS on the IBM @server zseries 800 (z800) server, make sure that the LPAR you are running on is not named ZOSExxxx. If an LPAR on the z800 server is named ZOSExxxx, you cannot run either OS/390 or z/OS on that LPAR. For complete information, see *z/OS and z/OS.e Planning for Installation*.

Chapter 5. Version 1 Release 2 overview

The following sections describe the new and changed MVS functions that are introduced for z/OS Version 1 Release 2.

Release summary

Table 10 summarizes the updates that have been introduced to MVS in MVS Version 1 Release 2. For more information, refer to the detailed section for each item.

Table 10. Summary of MVS Updates for MVS Version 1 Release 2

For Information About:	Refer to:
64-bit virtual addressing	31
Command flooding	32
System-managed duplexing rebuild	33
System logger exploitation of CF duplexing rebuild	33
Wildcard support for global resource serialization resource name lists	34
Workload management	34
Recoverable resource management services (RRMS)	34
Open data set relief	35
Service aids enhancements	35
Automatic tape switching	36

64-bit virtual addressing

Starting with z/OS V1R2, MVS address spaces are immensely larger than previously allowed. The new, larger address spaces are 16 exabytes, which is 8 billion (8 thousand million or 8 000 000 000) times the size of the former 2-gigabyte address space. The new address has 2^{64} logical addresses. That is 16 with 18 zeroes after it: 16 000 000 000 000 000 000 000 bytes, or 16 exabytes.

In some fundamental ways the new address space is the same as the earlier address spaces (24-bit address spaces, introduced by MVS in the 1970s, and 31-bit address spaces, introduced by MVS/XA™ in the early 1980s). The address space structure below the 2 gigabyte address has not changed; because of this, all programs that run in 24-bit addressing mode (AMODE 24) or 31-bit addressing mode (AMODE 31) continue to run without change.

In 31-bit and 64-bit address spaces, a virtual "line" marks the 16-megabyte address. Addresses below 16 megabytes were "below the line". Addresses above 16 megabytes were "above the line". With 64-bit addressing, a virtual "bar" marks the 2-gigabyte address. Addresses below 2 gigabytes are "below the bar". Addresses above 2 gigabytes are "above the bar".

The area above the bar is intended for data; no programs run above the bar. Also, there is no area above the bar that is common to all address spaces, and there are no system control blocks above the bar. IBM reserves an area of storage above the bar for special uses to be developed in the future.

V1R2 Overview

There are two reasons why someone designing an application would want to use the area above the bar:

- The program needs more than 2 gigabytes of virtual storage at one time.
- The program uses complex algorithms to manage storage, re-allocating and re-using areas and checking storage availability. Running in a 64-bit address space means that you do not need this kind of programming effort. A program can potentially have as much virtual storage above the bar as it needs, without running out of storage or overlaying another program's data. The application programmer's job is easier and the performance of the program improves.

For more information about 64-bit addressing, see the following:

- To learn more about the 64-bit address space and how to use it, see *z/OS MVS Programming: Extended Addressability Guide* and *z/OS MVS Programming: Authorized Assembler Services Guide*.
- The system service that programs use to create and free storage above the 2-gigabyte address is the IARV64 macro. For more information on using the IARV64 macro in unauthorized programs, see the *z/OS MVS Programming: Assembler Services Reference IAR-XCT*. For authorized programs, see *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*.
- For a description of the new assembler instructions that apply to programs using storage above the 2-gigabyte address, see *z/Architecture™ Principles of Operation*.

Migration actions:

- You can set a limit on how much virtual storage above the bar each address space can use when you set up the system. This limit is called the MEMLIMIT. If you do not set a MEMLIMIT, the system default is 0, meaning that no address space can use virtual storage above the bar. You can set a system-wide MEMLIMIT through SMF, and you can also set a MEMLIMIT for a specific address space in the JCL that creates the address space.
- All programs start in AMODE 31 or AMODE 24; at that time, they are unable to work with data above the bar. To use virtual storage above the bar, a program must request storage above the bar, be in AMODE 64, and use the new z/Architecture assembler instructions.
- If the LOADxx ARCHLVL statement does not specify the proper level for the processor being used, it will be ignored with an error message. The ARCHLVL statement should be removed from all LOADxx members used with z/OS.

Command flooding

Most MVS commands are executed by attaching a task in either the *MASTER* or CONSOLE address space. If too many of these tasks are attached at one time (usually because a program has issued too many MGCRE macros), the system could run short of space in LSQA, and eventually enter wait state 07E, which would require a re-IPL.

Starting with APAR OW45398, which is incorporated into z/OS V1R2, attached commands that run in the *MASTER* or CONSOLE address space are divided into four "command classes". In each class, only 50 commands can execute at one time. Any additional commands in that class must wait for execution. This prevents the out-of-space condition and the resulting wait state 07E from occurring.

To manage the number of commands that are awaiting execution, the system operator can issue the CMDS command to display the status of commands, remove

selected commands that are awaiting execution, or cancel commands that are executing. When a command is removed before execution, the command issuer receives message IEE065I COMMAND NOT EXECUTED, CMD=*command* instead of the usual command response message.

The IEECMDS macro provides similar function for use in programs.

For more information, see:

- For information about the authorization needed to issue the CMDS command: *z/OS MVS Planning: Operations*
- For information about the CMDS command: *z/OS MVS System Commands*
- For information about the IEECMDS macro: *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*

Migration action: To manage the number of commands that are awaiting execution, the system operator can issue the CMDS command to display the status of commands, remove selected commands that are awaiting execution, or cancel commands that are executing. When a command is removed before execution, the command issuer receives message IEE065I COMMAND NOT EXECUTED, CMD=*command* instead of the usual command response message. You might need to change your system automation routines so that they recognize and handle message IEE065I.

System-managed duplexing rebuild

System-managed duplexing rebuild is a process by which a duplexed copy of a coupling facility structure is created and maintained, so that in the event of a failure, a viable structure will remain available to the application. While the structure is duplexed, operations to the structure are maintained in a synchronized manner through protocols established by z/OS. As opposed to user-managed duplexing rebuild, which applies only to cache structures, system-managed duplexing rebuild applies to all structure types.

For more information, see the following:

- For planning and setup information, see *z/OS MVS Setting Up a Sysplex*
- For information on the availability of this new function, see the PSP bucket for Release 2.

System logger exploitation of CF duplexing rebuild

Starting with z/OS V1R2, system logger exploits the coupling facility duplexing rebuild facility. This provides the following advantage. Every time a system logger application writes a log block to a log stream, system logger automatically ensures there is a duplicate copy of the data. This helps ensure against data loss caused by coupling facility, system, or system logger failure. System logger keeps a duplex copy of data in log stream interim storage only. The duplicate copy is kept until the data is offloaded from interim storage to DASD log data sets.

For more information, see the following:

- For planning and setup information, see *z/OS MVS Setting Up a Sysplex*
- For information on changes to the IXGINVNT macro, see *z/OS MVS Programming: Assembler Services Reference IAR-XCT*.

Wildcard support for Global Resource Serialization resource name lists

Starting with z/OS V1R2, an installation can specify wildcards in resource name lists used in GRS (global resource serialization). This allows the customer to customize ENQ/DEQ processing in a sysplex.

For more information, see the following:

- For planning and setup information, see *z/OS MVS Planning: Global Resource Serialization*.
- For information on changes to the GRSRNLxx parmlib member, see *z/OS MVS Initialization and Tuning Reference*.
- For information on changes to installation exits, see *z/OS MVS Installation Exits*.

Migration actions:

- Exit ISGGREX0 has been deleted and is replaced by new dynamic exit ISGNQXIT. If you previously used exit ISGGREX0, and need to continue to use functions supported by ISGGREX0, update ISGNQXIT to support those functions.
- Before installing z/OS V1R2 (or the coexistence PTFs on lower-level systems), when the system is IPLed, the system invokes the GRS RNL exit points defined in the nucleus (ISGGSIEX, ISGGSEEX, and ISGGRCX). Starting with z/OS V1R2 (or, on lower-level systems, when the coexistence PTFs are installed), the system invokes new exit point ISGNQXIT. If any of the old exits are detected during system initialization, GRS issues message ISG351I to indicate that the exit will not be invoked. To maintain function, you must install exit ISGNQXIT and migrate any desired function from the old exits to the new exit. For more information, see *z/OS MVS Installation Exits*.

Workload Management enhancements

Starting with z/OS V1R2, IBM provides WLM support for non-z/OS operating systems (including LINUX). The new support allows WLM to manage the number of server instances per server address space.

For more information, see:

- *z/OS MVS Planning: Workload Management*
- *z/OS MVS Programming: Workload Management Services*
- *z/OS MVS System Commands*
- *z/OS MVS Diagnosis: Reference*
- *z/OS MVS System Management Facilities (SMF)*

Recoverable Resource Management Services (RRMS) enhancements

Starting with z/OS V1R2, RRS supports multisystem cascaded transactions. This support enhances the scope of cascaded transactions to span multiple systems in a sysplex as long as the systems all use the same logging group. With multisystem cascaded transaction support, RRS can also allow resource managers to restart on any system in the same RRS logging group.

For more information, see:

- *z/OS MVS Programming: Resource Recovery*

Open data set relief

Starting with z/OS V1R2, certain control blocks used by allocation can be moved above the 16 MB line. This is done by specifying LOC=ANY on the GETDSAB macro. This allows customers to increase the number of dynamically allocated data sets.

For more information, see the following:

- For guidance information on using the LOC parameter of the GETDSAB macro, see *z/OS MVS Programming: Authorized Assembler Services Guide*
- For information on the LOC parameter of the GETDSAB macro, see *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*

Service aids enhancements

Starting with z/OS V1R2, the following enhancements are made to the MVS service aids. These enhancements are intended to offset the increasing complexity of installing and maintaining z/OS systems:

- IPCS enhancements:
 - When IPCS is invoked, it states which level of the operating system it is intended to support. This helps when debugging dumps or traces in a multi-system, multi-level environment.
 - IPCS allows users to access HFS paths.
 - IPCS uses data spaces to make more private area storage available for analysis and to accommodate larger reports.
 - The IPCS dialog provides a SORT primary command, which helps users manage multiple IPCS reports.
 - IPCS enhances the WHERE command to associate private area addresses with storage subpools.
 - IPCS eases problems when multiple dumps are required to adequately analyze a problem.

For more information on IPCS enhancements, see

- *z/OS MVS IPCS User's Guide*
- *z/OS MVS IPCS Commands*
- *z/OS MVS IPCS Customization*
- Starting with z/OS V1R2, IBM supplies a large set of sample DUMP command parmlib members in SYS1.SAMPLIB. Each of the parmlib members can be used as supplied by IBM, or can be used as a base for further modification depending on installation-specific requirements, such as system names, address space names, and so on. To use these parmlib members, IBM recommends that you copy them to a data set in your parmlib concatenation. Care has been taken to ensure that system symbols are used where names can vary by installation. For more information about setting up the IBM-supplied DUMP command parmlib members, see *z/OS MVS Diagnosis: Tools and Service Aids*. For more information about using the PARMLIB= parameter of the DUMP command, see *z/OS MVS System Commands*.
- The SLIP command has additional parameters:
 - ACTION=STOPGTF
 - MSGID=

For more information, see *z/OS MVS System Commands*.

Automatic tape switching

The new ATS STAR design improves the availability and system management characteristics of the existing automatic tape switching function. The ATS STAR design drops the use of the IEFAUTOS coupling facility structure and instead uses global resource serialization and XCF services to maintain serialization when allocating shared tape devices. Both ATS STAR and the IEFAUTOS function can coexist in a sysplex composed of z/OS R2 and levels of z/OS and OS/390 lower than z/OS R2, and will properly maintain the integrity of the allocation of shared tape devices across the mixed sysplex. Systems at a level lower than z/OS R2 will continue to use the IEFAUTOS structure and systems at R2 will use the ATS STAR function. Once all systems sharing the device are at the R2 level, the IEFAUTOS structure can be removed from the CFRM policy. To maximize the performance of the ATS STAR function, it is strongly recommended that you use the global resource serialization Star configuration, rather than the Ring configuration.

Coexistence of the ATS STAR and IEFAUTOS functions is enabled by having the system maintain information about the use of an autoswitchable device in either the Allocation address space (ALLOCAS) or in the IEFAUTOS structure. The two functions act independently of each other, each as a subset of the systems in the sysplex. When a device is in use by a system in either subset, the device will appear as "Assigned to Foreign Host (AFH)" to any other system that is not a member of that subset.

Toleration support for the ATS STAR function is required for users of the Multi-Image Integrity (MII) and Multi-Image Allocation (MIA) functions of Computer Associates Multi-Image Manager (MIM). Before applying the PTF for OW51003, contact Computer Associates for the associated support.

For more information, see the following books:

- *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
- *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
- *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*

Chapter 6. Version 1 Release 1 overview

The following sections describe the new and changed MVS functions and their associated migration tasks that are introduced for z/OS Version 1 Release 1.

Release summary

Table 11 summarizes the updates that have been introduced to MVS in MVS Version 1 Release 2. For more information, refer to the detailed section for each item.

Table 11. Summary of MVS Updates for z/OS Version 1 Release 1

For Information About:	Refer to:
Using msys for Setup to set up a parallel sysplex	37
Intelligent Resource Director (IRD)	37
Additional support for operator consoles	38
Running in z/Architecture mode	39
Changes to PFK tables for MCS consoles	39
Changes to CVT and ECVT control blocks	40
Changes to UNIX System Services	Chapter 7, "Summary of interface changes" on page 41 and <i>z/OS UNIX System Services Planning</i>

Using msys for Setup to set up a Parallel Sysplex

Starting with z/OS V1R1, IBM provides a new way to customize a parallel sysplex using msys for Setup.

- For information on msys for Setup, see *z/OS Managed System Infrastructure for Setup User's Guide*.
- For specific information on using msys for Setup to customize a parallel sysplex, see *z/OS MVS Setting Up a Sysplex*.

Intelligent Resource Director

The **Intelligent Resource Director** (IRD) extends the concept of goal-oriented resource management by allowing you to group logical partitions that are resident on the same physical server, and in the same sysplex, into an "LPAR cluster." This gives Workload Management the ability to manage resources, both processor and DASD I/O, not just in one single image but across the entire cluster of logical partitions.

The three functions that make up IRD are as follows:

- **LPAR CPU Management**, which lets Workload Manager distribute processor resources across an LPAR cluster by dynamically adjusting the LPAR weights in response to changes in the workload requirements. When important work is not meeting its goals, WLM will raise the weight of the partition where that work is running, thereby giving it more processing power. As part of LPAR CPU Management, WLM will also optimize the number of online logical CPUs configured online to each partition. As the LPAR weights change, the number of

online logical CPUs are also changed to maintain the closest match between logical CPU speed and physical CPU speed.

LPAR CPU Management requires a CF level 9 coupling facility structure and z/OS images running in goal mode on a zSeries™ machine in z/Architecture mode.

- **Dynamic Channel Path Management**, which lets Workload Manager dynamically move channel paths through the ESCON® Director from one I/O control unit to another, in response to changes in the workload requirements. By defining a number of channel paths as “managed,” they become eligible for this dynamic assignment. By moving more bandwidth to the important work that needs it, your DASD I/O resources are used much more efficiently. This may decrease the number of channel paths you need in the first place, and could improve availability — in the event of a hardware failure, another channel could be dynamically moved over to handle the work requests.

Dynamic Channel Path Management requires z/OS and a zSeries machine in z/Architecture mode, which can be running in either Basic or LPAR mode. It supports DASD control units which are non synchronous and are connected via an ESCON Director. (Initially, it supports ESCON channels only.) It's optimized when WLM is running in goal mode.

- **Channel Subsystem Priority Queuing** is an extension of I/O priority queuing, a concept that has been evolving in MVS over the past few years. If important work is missing its goals due to I/O contention on channels shared with other work, it will be given a higher channel subsystem I/O priority than the less important work. This function goes hand in hand with the Dynamic Channel Path Management described above — as additional channel paths are moved to control units to help an important workload meet goals, Channel Subsystem Priority Queuing ensures that the important workload receives the additional bandwidth before less important workloads that happen to be using devices assigned to the same control unit.

Channel Subsystem Priority Queuing requires a zSeries machine in z/Architecture mode. It initially supports ESCON and OEMI channels only. It's optimized when WLM is running in goal mode.

Migration action: If Vary CPU management (part of the Intelligent Resource Director) is enabled, then any program that specifies the CPUMASK keyword on the IEAMSCHD macro, or directly updates the SRBCPAFF field in an SRB or the TCBAFFN field in a TCB, must be modified to use the IWMCPAFN macro. It is not necessary to use the IWMCPAFN macro when CPU affinity is set in the program properties table in the SCHEDxx parmlib member. It is also not necessary to use it for programs that use cryptographic coprocessors. (WLM will not vary offline processors that have cryptographic coprocessors associated with them.) See *z/OS MVS Programming: Workload Management Services* for more information on the IWMCPAFN macro.

For more detailed information on the Intelligent Resource Director, see *z/OS MVS Planning: Workload Management* and the IBM Redbook *z/OS Intelligent Resource Director*.

Additional support for operator consoles

z/OS Version 1 Release 1 supports a new type of console, called SMCS (SNA Multiple Console Support). SMCS is a VTAM® application, and can use VTAM controlled devices for console support, eliminating the need for a non-SNA 3174 Terminal Control Unit.

For more information, see *z/OS MVS Planning: Operations*.

Running in z/Architecture mode

z/OS and the IBM @server zSeries 900 (z900) deliver the 64-bit architecture (z/Architecture) to provide qualities of service that are critical for the e-business world. 64-bit real storage support eliminates expanded storage and helps eliminate paging. 64-bit real storage support may allow you to | consolidate your current systems into fewer logical partitions (LPARs) or to a single native image.

Migration actions:

- Starting with z/OS V1R1, the default value on the ARCHLVL parameter in the LOADxx parmlib member is different from OS/390 Release 10:
 - In OS/390 Release 10, for all processors, the default value for ARCHLVL was 1 (ESA/390 mode). To run in z/Architecture mode in OS/390 Release 10, you needed to specify:


```
ARCHLVL 2
```

in the LOADxx parmlib member and you needed to run on a processor that supports z/Architecture mode.
 - Starting with z/OS V1R1:
 - On a processor that supports z/Architecture, the ARCHLVL default is 2 (run in z/Architecture mode).
 - On other processors, specifying ARCHLVL 2 results in a wait state. The default value is 1 (run in ESA/390 mode).

For normal processing, you can omit the ARCHLVL parameter from LOADxx, and remove it if you had previously specified it. For more information on the ARCHLVL parameter, see *z/OS MVS Initialization and Tuning Reference*.

- If you are migrating to z/Architecture mode, convert expanded storage to central storage. If you run in z/Architecture mode and have expanded storage defined, the expanded storage is not used. The system issues message IAR016I. In z/Architecture mode, system services that used expanded storage in ESA/390 mode (such as hiperspaces) have been changed to use real storage instead. Programs that use these system services should not require any changes.
- When z/OS is running in z/Architecture mode, authorized applications that issue the LRA instruction against unfixed storage might receive an abend 0D3, reason code 13. The results of an LRA instruction against unfixed storage has always been unpredictable. In z/Architecture mode, the LRA instruction might require a 64-bit result when only a 32-bit result can be returned; in that case, the hardware causes a program interrupt. If the program is using the LRA instruction to validate that the virtual address is backed by real storage, then use the TPROT instruction instead. If a valid real address is required, the storage must be properly fixed in real storage below 2 GB before issuing the LRA instruction. The STRAG or LRAAG instruction can be used to obtain a 64-bit real address if the storage can be backed anywhere.

Changes to PFK tables for MCS consoles

In a PFK table for an MCS console, if you have a double underscore in a command in z/OS V1R1, it will be treated slightly differently than before. The double underscore will be changed to one underscore, but will not cause the cursor to be placed after the underscore. If you want the command to have an underscore with

the cursor on the next character, code three underscores. For more information and an example, see the section on setting up PFKs for consoles in *z/OS MVS Planning: Operations*.

Changes to CVT and ECVT control blocks

Because the CVT and ECVT control blocks contain fields used by many application programs, we are singling out some changes to these control blocks. For more information on the CVT data area, see *z/OS MVS Data Areas, Vol 1 (ABEP-DALT)*. For more information on the ECVT data area, see *z/OS MVS Data Areas, Vol 2 (DCCB-ITZYRETC)*.

Migration action: Examine your application programs and the list of control block fields below and take appropriate action to ensure that your programs will be compatible with the changes:

- CVTOSLVL is a bitstring in the CVT data area with each 'feature bit' representing an operating system release level or an operating system feature. A program can check if the appropriate bit is on to determine if it is running on a particular release of the operating system or higher.
- ECVTPSEQ is a field in the ECVT data area representing the product sequence number. It can be used to determine if the operating system is at a suitable level for a desired function. Its value will always increase from one release level to the next regardless of the character release identifier assigned to that release.
- ECVTPNAM is a field in the ECVT data area representing the product name in character form. If you depend on this being OS/390, you will have a migration problem.
- ECVTVER is a field in the ECVT data area representing the release version number in character form. If you make the assumption that this field will increase from one release to the next, you will have a migration problem. For example, OS/390 Release 10 is version 2 while z/OS Release 1 is version 1.
- ECVTREL is a field in the ECVT data area representing the release number in character form. If you make the assumption that this field will increase from one release to the next, you will have a migration problem. For example, the first z/OS release has a smaller release number, 1, than its predecessor, OS/390 Release 10.
- ECVTMOD is a field in the ECVT data area representing the modification number in character form. Do not assume this field will increase from one release to the next.

Chapter 7. Summary of interface changes

This section summarizes the new and changed interface components for MVS

For Information About:	Refer to:
SYS1.PARMLIB	42
SYS1.PROCLIB	46
SYS1.SAMPLIB	47
System commands	48
SMF records	54
Macros	56
Callable services	66
C Language interfaces for Workload Management Services	67
Installation exits	68
Control blocks	69
IPCS subcommands	76
Messages	"Where to Find Changes to System Messages" on page 77

Summary of Changes to SYS1.PARMLIB

Table 12 lists the new and updated members of SYS1.PARMLIB. See the following books for more detailed information:

- *z/OS MVS Initialization and Tuning Reference*
- *z/OS MVS Initialization and Tuning Guide*

Note: Once you have installed the new release of z/OS, you can compare the new copy of SYS1.PARMLIB with a copy of SYS1.PARMLIB on the system from which you are migrating. If you are migrating multiple products, you can use this method to compare SYS1.PARMLIB members from each of those products. For best results, make sure that the "old" copy of SYS1.PARMLIB has the same level of service as the system from which you are migrating.

Table 12. Summary of new and changed parmlib members

Member	Release	Description	Related Support
BPXPRMxx	V1R1		See <i>z/OS UNIX System Services Planning</i> for details
	V1R2		
	V1R3		
	V1R4	<p>New parameters:</p> <ul style="list-style-type: none"> • New AUTHOGLIST lets you specify the pathname of a hierarchical file system (HFS) file that contains the lists of APF authorized pathnames and program names. • New second NETWORK statement lets you define an Inet or Cinet configuration. • New AUTOMOVE NOAUTOMOVE parameter lets you specify whether you want ownership of a filesystem to move if the owning system goes down. <p>Changed parameter: The size allowed for the PARM parameter on the MOUNT, ROOT, and FILESYSTYPE statements in the BPXPRMxx parmlib member has been reduced to 500 characters.</p>	<p><i>z/OS UNIX System Services Planning</i></p> <p>"Shared HFS updates" on page 15</p>
CONFIGxx	V1R1	<p>Changed member: New parameters on the CHP statement indicate whether a channel path will be statically defined or else defined to be dynamically managed. A new statement, SWITCH, specifies the configuration of the switch ports for dynamic channel path management.</p>	"Intelligent Resource Director" on page 37

Table 12. Summary of new and changed parmlib members (continued)

Member	Release	Description	Related Support
CONSOLxx	V1R1	<p>New subparameter: SMCS is a new subparameter of DEVNUM.</p> <p>New parameters:</p> <ul style="list-style-type: none"> • LU is a new parameter on the CONSOLE statement. For LU(nnnnnnnn) the LU keyword is optional, but may only be specified with DEVNUM(SMCS). This keyword defines the LU that may only use this console. • LOGON is a new parameter on the CONSOLE statement that may be used to override the LOGON specified on the DEFAULT statement (if any). • APPLID is a new parameter on the INIT statement that specifies the SecureWay® Communication Server APPLID that SMCS is to use on this system. • GENERIC is a new parameter on the INIT statement that specifies the SecureWay Communication Server Generic Resource name that SMCS is to use in this sysplex. 	"Additional support for operator consoles" on page 38
GRSRNLxx	V1R2	Changed member: The TYPE keyword on GRSRNLxx parameter has been changed by the addition of a new option, PATTERN. This allows use of wildcard characters within resource names.	"Wildcard support for Global Resource Serialization resource name lists" on page 34
IEAICSxx	V1R3	Changed member: With the removal of WLM compatibility mode in z/OS Release 3, this member is no longer used.	"Removal of Workload Management compatibility mode" on page 28
IEAIPSxx	V1R3	Changed member: With the removal of WLM compatibility mode in z/OS Release 3, this member is no longer used.	"Removal of Workload Management compatibility mode" on page 28
IEAOPTxx	V1R1	Changed member: A new statement, VARYCPU, specifies whether LPAR Vary CPU management is available or not available.	"Intelligent Resource Director" on page 37
	V1R3	Changed member: With the removal of WLM compatibility mode in z/OS Release 3, most of the options specified in this member are no longer valid.	"Removal of Workload Management compatibility mode" on page 28
IEASYMxx	V1R4	Changed member: You can now define up to 800 static system symbols (for each system) in your environment using the SYMDEF parameter. Previously, you could define 99 static system symbols.	"Support for additional installation defined static system symbols" on page 18

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Table 12. Summary of new and changed parmlib members (continued)

Member	Release	Description	Related Support
IEASYSxx	V1R1	Changed member: New parameters ILMLIB and ILMMODE provide support for IBM License Manager.	<i>z/OS IBM License Manager: Planning and Customization</i>
	V1R3	Changed member: <ul style="list-style-type: none"> New IKJTSO parameter specifies the parmlib member from which TSO/E settings are obtained. The ICS= and IPS= parameters, previously used only in WLM compatibility mode, are no longer valid, as compatibility mode is no longer available. New LICENSE= parameter specifies which operating system is running. The default is for z/OS. 	"Removal of Workload Management compatibility mode" on page 28
IECIOSxx	V1R4	Changed member: .There is now a default of ALL for the BOX_LP statement on the HOTIO and TERMINAL parameters, specifying that all device classes are to be boxed when the appropriate conditions exist.	"Default boxing of devices with hot I/O, terminal, or hung interface conditions" on page 21
IKJTSOxx	V1R3	Changed member: <ul style="list-style-type: none"> New BROADCAST keyword on SEND statement lets you specify the broadcast data set. New value for LOGNAME keyword on SEND statement. 	"TSO/E dynamic broadcast support" on page 28
LOADxx	V1R2	ARCHLVL statement should be removed.	"64-bit virtual addressing" on page 31
MSTJCLxx	V1R3	Changed member: MSTJCLxx no longer points to the broadcast data set. You can now specify the broadcast data set in the IKJTSOxx member.	"Removal of Workload Management compatibility mode" on page 28
SCHEDxx	V1R3	Changed member: PGMNAME(name) statement with PRIV keyword, previously used only in WLM compatibility mode, is no longer valid, as compatibility mode is no longer available.	"Removal of Workload Management compatibility mode" on page 28
SMFPRMxx	V1R2	Changed member: A new parameter has been added to the SMFPRMxx parmlib member. MEMLIMIT specifies the default value used by SMF jobs that do not have an explicit memory limit.	"64-bit virtual addressing" on page 31

Table 12. Summary of new and changed parmlib members (continued)

Member	Release	Description	Related Support
	V1R3	New Keyword: New keyword, MULCFUNC or NOMULCFUNC, allows an installation to specify whether their IFAUSAGE users must specify the REQUEST=FUNCTIONxxx parameter. MULCFUNC, which is the default, means that users of IFAUSAGE (who register and deregister) must specify REQUEST=FUNCTIONxxx requests. NOMULCFUNC means that users of IFAUSAGE do not need to use the FUNCTIONxxx requests. Specifying NOMULCFUNC can help people using the Sub-Capacity Reporting Tool to limit the volume of the SMF records.	"SMF support for sub-capacity pricing" on page 30
TSOKEYxx	V1R4	Changed parameter: The USERMAX parameter has different meanings and defaults for z/OS and z/OS.e systems.	<i>z/OS MVS Initialization and Tuning Reference</i>

Summary of Changes to SYS1.PROCLIB

The following table lists the new and updated callable services. See *z/OS MVS Programming: Callable Services for HLL* for more detailed information.

Table 13 identifies members of SYS1.PROCLIB that are new, changed, or deleted in z/OS.

Note: Once you have installed the new release of MVS/ESA, you can compare the new copy of SYS1.PROCLIB with a copy of SYS1.PROCLIB on the system from which you are migrating. If you are migrating multiple products, you can use this method to compare SYS1.PROCLIB members from each of those products. For best results, make sure that the "old" copy of SYS1.PROCLIB has the same level of service as the system from which you are migrating.

Table 13. Summary of New and Changed SYS1.PROCLIB members

Member	Release	Description	Related Support
ILMTAGNT	V1R1	New Procedures: Support for IBM License Manager.	Release update
ILMTSRVR	V1R1	New Procedures: Support for IBM License Manager.	Release update

Summary of Changes to SYS1.SAMPLIB

Table 14 lists the new and updated members of SYS1.SAMPLIB. See *Insert title here* for more detailed information. identifies members of SYS1.SAMPLIB that are new, changed, or deleted in z/OS.

Note: Once you have installed the new release of z/OS, you can compare the new copy of SYS1.SAMPLIB with a copy of SYS1.SAMPLIB on the system from which you are migrating. If you are migrating multiple products, you can use this method to compare SYS1.SAMPLIB members from each of those products. For best results, make sure that the "old" copy of SYS1.SAMPLIB has the same level of service as the system from which you are migrating.

Table 14. Summary of new and changed SYS1.SAMPLIB members

Member	Release	Description	Related Support
IEACONXX	V1R2	Changed member: Added sample SMCS console definitions.	Release update
ILMELGCA ILMELGG ILMELGDA ILMELGDG ILMELGDS ILMELGSS ILMHXSLM ILMLIBAL	V1R1	New members: Support for IBM License Manager	Release update
IWMINSTL	V1R3	New Member: JCL to install and optionally activate a service definition.	"TSO/E dynamic broadcast support" on page 28
IWMSSDEF	V1R3	New Member: Simple service definition, used by default if migrating to z/OS Release 3 without an existing service definition.	Release update
SPPACK	Every release	Changed member: Maintenance.	Release update

Summary of changes to system commands

Table 15 identifies MVS commands that are new, changed, or deleted in z/OS. See *z/OS MVS System Commands* for more detailed information.

Note for Online Users: In the following table, selecting the command name opens *z/OS MVS System Commands* at the topic describing the specific command (if the book is available to be opened). For example, if you move the cursor to DISPLAY, and press Enter, you should see the explanation of DISPLAY from *z/OS MVS System Commands*.

Table 15. Summary of new and changed system commands

Command	Release	Description	Related Support
CMDS	V1R2	New command: Displays executing and waiting MVS commands, deletes commands that are waiting for execution, and cancels commands that are executing.	"Command flooding" on page 32
	V1R4	Changed options: Two new command classes are added to the CLASS= parameter for improved control of command flooding: class C3 for ROUTE and class M3 for SEND.	Release update
CONFIG	V1R1	<p>Changed options: The CONFIG CHP(xx),OFFLINE command has changes associated with SMCS consoles.</p> <p>The CONFIG command continues to be rejected if a CHPID that is being taken offline will result in a loss of the sysplex master console only if the master console is an MCS console. If the sysplex master console is an SMCS console, the system cannot determine if the CHPID is associated with the LU in use by the master console, and will allow the CHPID to be taken offline even if it is in use by the sysplex master console.</p> <p>With SMCS consoles, there is no way to associate the CHPID to an LU. Therefore, the CONFIG command would be accepted. If SecureWay Communication Server is using the CHPID to communicate with the consoles, the consoles will be lost when the CONFIG command executes.</p>	"Additional support for operator consoles" on page 38

Table 15. Summary of new and changed system commands (continued)

Command	Release	Description	Related Support
CONTROL	V1R1	<p>New Options: CONTROL M provides support for the SMCS APPLID and GENERIC.</p> <p>Changed Information: CONTROL V,USE=MS and CONTROL V,USE=SD will not work for SMCS consoles.</p> <p>,REF This command will display the SMCS APPLID of the current system and SecureWay Communication Server Generic name for SMCS.</p>	“Additional support for operator consoles” on page 38
DISPLAY	V1R1	<p>New options:</p> <ul style="list-style-type: none"> • DISPLAY CONSOLES,SMCS provides additional information by displaying the status of SMCS applications in the sysplex. • DISPLAY IOS,DCM displays dynamic channel path management information. • DISPLAY IOS,GROUP displays XCF group information. • DISPLAY SWITCH displays switch port information. 	“Additional support for operator consoles” on page 38
DISPLAY	V1R2	<p>New options: DISPLAY U provides the ability to request the status of automatically switchable devices on another system.</p>	Release update

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Table 15. Summary of new and changed system commands (continued)

Command	Release	Description	Related Support
DISPLAY	V1R3	<p>New option: DISPLAY IKJTSO displays the specifications in the active IKJTSOxx parmlib member, which contains current values for TSO/E.</p> <p>Changed options:</p> <ul style="list-style-type: none"> DISPLAY M now does the following: <ul style="list-style-type: none"> Displays the status of all processors, even those that are neither online nor offline. Displays the number of online channel paths to devices or a single channel path to a single device. The DISPLAY DMN command, previously available only on systems operating in WLM compatibility mode, is disabled because WLM compatibility mode is no longer available. <p>Additional information:</p> <ul style="list-style-type: none"> DISPLAY OMVS now provides additional output showing the state of the OMVS address space during a shutdown or restart. DISPLAY IPLINFO includes the value currently in use for the LICENSE= keyword used for IPL, showing the operating system currently in use. 	<p>“TSO/E dynamic broadcast support” on page 28</p> <p>“Removal of Workload Management compatibility mode” on page 28</p>
DISPLAY	V1R4	<p>Additional information:</p> <ul style="list-style-type: none"> The output from the DISPLAY OMVS,Filesystem= command now displays the aggregate name and the system list. The output from the DISPLAY OMVS,OPTIONS command will display “N/A” when distributed BRLM is active. 	z/OS UNIX System Services Planning
DUMP	V1R2	<p>Changed option: PARMLIB= allows the operator to avoid having to enter multiple DUMP command options and instead specify the suffixes of one or more DUMP command parmlib members (IEADMCxx parmlib members).</p>	“Service aids enhancements” on page 35
DUMPDS	V1R2	<p>New function: Symbol substitution is now supported on all sub-operands of the DUMPDS command.</p>	Release update

Table 15. Summary of new and changed system commands (continued)

Command	Release	Description	Related Support
LOGOFF	V1R1	Additional Information: The LOGOFF command is enhanced to support SMCS consoles.	"Additional support for operator consoles" on page 38
LOGON	V1R1	Additional Information: LOGON is enhanced to support SMCS consoles.	"Additional support for operator consoles" on page 38
MODIFY	V1R3	New option: The new MODIFY OMVS command for limited use in shutting down or restarting the z/OS UNIX System Services environment. See <i>z/OS UNIX System Services Planning</i> for details before using this command. Changed option: With compatibility mode no longer available, the MODIFY WLM, MODE= command, previously used to switch WLM between goal mode and compatibility mode, is disabled.	<i>z/OS UNIX System Services Planning</i> "Removal of Workload Management compatibility mode" on page 28
	V1R4	Additional information: <ul style="list-style-type: none"> The MODIFY BPXOINIT,FILESYS=DISPLAY command now displays the aggregate. The MODIFY BPXOINIT,FILESYS=DISPLAY,GLOBAL command now displays "N/A" when distributed BRLM is active. 	
RESET	V1R1	New options: The RESET CN command is enhanced to support SMCS consoles.	"Additional support for operator consoles" on page 38
	V1R3	Changed option: The RESET jobname command is partially disabled. With compatibility mode no longer available, you can no longer use the RESET command to change the performance group of a job currently in execution.	"Removal of Workload Management compatibility mode" on page 28
SET	V1R3	New option: IKJTSO=xx which updates the current TSO/E settings from the IKJTSOxx parmlib member, can now include a broadcast dataset switch. The TSO/E PARMLIB UPDATE command performs the same function.	"TSO/E dynamic broadcast support" on page 28
SETIOS	V1R1	New option: The SETIOS DCM=YES NO REFRESH lets you specify that dynamic channel path management is to be turned on or off, or that a control unit model table update is to be initiated.	"Intelligent Resource Director" on page 37

Interface Changes

Table 15. Summary of new and changed system commands (continued)

Command	Release	Description	Related Support
SETSMF	V1R3	New options: New MULCFUNC and NOMULCFUNC SMF parameters on the SETSMF command allow you to update SMFPRMxx to specify whether any measured usage programs should record usage data (MULCFUNC) or registration data (NOMULCFUNC).	"SMF support for sub-capacity pricing" on page 30
SETOMVS	V1R3	New option: New UNMOUNT option added to the AUTOMOVE=YES NO parameter. In a sysplex where systems are participating in shared HFS, these parameters indicate what happens if the system that owns a file system goes down. UNMOUNT indicates that the file system and any filesystems mounted within its subtree should be unmounted if the system's owner should crash.	z/OS UNIX System Services Planning
	V1R4	New options: <ul style="list-style-type: none"> New AUTHPGMLIST option lets you dynamically change the pathname of a hierarchical file system (HFS) file containing the lists of APF authorized pathnames and program names, which is specified in the BPXPRMxx parmlib member. New AUTOMOVE NOAUTOMOVE option lets you dynamically specify whether you want ownership of a filesystem to move if the owning system goes. Changed option: The SETOMVS RESET= command has been updated to let you add a second NETWORK statement to the BPXPRMxx parmlib member. This NETWORK statement lets you define an Inet or Cinet configuration.	
SLIP	V1R2	New Options: <ul style="list-style-type: none"> ACTION=STOPGTF: Turns off GTF tracing when the SLIP trap becomes disabled (or deleted). MSGID=: Supports activation of a SLIP trap if ESTAE recovery is invoked out of a branch entry WTO. 	"Service aids enhancements" on page 35
SWITCH	V1R1	Additional Information: The SWITCH command is enhanced to support SMCS consoles.	"Additional support for operator consoles" on page 38

Table 15. Summary of new and changed system commands (continued)

Command	Release	Description	Related Support
VARY	V1R1	<p>New options: The VARY CN(...),LOGON= command can be used to change the LOGON value of an individual MCS or SMCS console.</p> <p>VARY SWITCH lets you place a switch port online or offline to dynamic channel path management.</p> <p>The VARY CN(...),LU= command can be used to change the LU that an SMCS console can be activated at.</p> <p>Changed Information: The VARY CN(...),OFFLINE and VARY ...,OFFLINE, and VARY ...,MSTCONS commands are enhanced to support SMCS consoles. VARY CN(...),ONLINE and VARY ...,ONLINE are not supported for SMCS consoles.</p>	<p>“Additional support for operator consoles” on page 38</p> <p>“Intelligent Resource Director” on page 37</p>
	V1R2	<p>New options: The new REFRESH QUIESCE option on the VARY WLM,APPLENV=applenv_name command allows you to determine how many regions have temporal affinities.</p>	<p>“Workload Management enhancements” on page 34</p>
	V1R4	<p>Additional information: We added information for the VARY CN and VARY CONSOLE commands indicating the need for UPDATE authority in their corresponding profiles.</p>	<p>Release update</p>

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SMF records

The following table lists the new and updated callable services. See *z/OS MVS System Management Facilities (SMF)* for more detailed information.

Table 16. Summary of new and changed SMF records

SMF record	Release	Description	Related support
Type 30 (Common Address Space Work)	V1R2	Added the following: <ul style="list-style-type: none"> Added bit 2 in field SMF30SFL of Storage and Paging Section. New field SMF30MEM for MEMLIMIT value in Storage and Paging Section. 	"64-bit virtual addressing" on page 31
	V1R3	Added a new field in the Processing Accounting section.	Release update
	V1R4	Changed field SMF30CEP	"Workload Management updates" on page 26
Type 42 (JES2 start)	V1R3	A new subtype 10 is written at the time of volume selection failure because of insufficient space when allocating a data set.	Release update
Type 70 (RMF™ CPU Activity)	V1R1	<ul style="list-style-type: none"> Update to RMF product section Update for Intelligent Resource Director and IBM License Manager 	"Intelligent Resource Director" on page 37
	V1R2	New subtype 2 for cryptographic processors. Data of the traditional record type 70 is described as type 70 subtype 1.	Release update
	V1R3	New RMF fields	Release update
Type 71 (RMF Paging Activity)	V1R1	Update to RMF product section	Release update
	V1R2	New swap reason code.	Release update
	V1R3	New RMF fields	Release update
Type 72 (RMF Workload Activity and Storage Data)	V1R1	Update to RMF product section	Release update
	V1R2	Updates for report class period reporting and crypto support in WLM.	"Workload Management enhancements" on page 34
	V1R3	New RMF fields	Release update
Type 73 (RMF Channel Path Activity)	V1R1	Update RMF product section	Release update
	V1R2	Updates for new channel measurement group.	Release update
	V1R3	New RMF fields	Release update
Type 74 (RMF Activity of Several Resources)	V1R1	<ul style="list-style-type: none"> Update RMF product section Subtype 7 - New subtype with data for FICON™ director activities 	Release update
	V1R2	Subtype 4 - Updates for enhanced reporting for duplexed coupling facilities.	"System-managed duplexing for rebuild" on page 33
	V1R3	New RMF fields	Release update
Type 78 (RMF Monitor I Activity)	V1R1	<ul style="list-style-type: none"> Update RMF product section Subtype 1 - Removed (4381 I/O queuing data) 	Release update
	V1R2	Subtype 3 - Removed two fields with I/O queuing activity data	Release update
	V1R3	New RMF fields	Release update

Table 16. Summary of new and changed SMF records (continued)

SMF record	Release	Description	Related support
Type 79 (RMF Monitor II Activity)	V1R1	<ul style="list-style-type: none"> Update RMF product section Subtype 7 - New subtype with data for FICON director activities Subtype 13 - Removed (4381 I/O queuing data) 	Release update
	V1R2	<ul style="list-style-type: none"> Subtype 1 - New swap reason code and enhanced SDSF support. Type 79, Subtype 2 - Enhanced SDSF support. Type 79, Subtype 12 - Updates for new channel measurement group. Type 79, Subtype 14 - Removed two fields with I/O queuing activity data. 	Release update
	V1R3	New RMF fields	Release update
Type 82 (ICSF/MVS Record)	V1R2	Updated for z/OS V1R2.	Release update.
Type 84 (JES3 Monitoring Facility (JMF) Data)	V1R4	New fields for the C/I JSAM buffer queue.	Release update.
Type 90 (System Status)	V1R3	Added new information in several fields in Subtype 30.	Release update.
Type 99 (System Resource Manager Decisions)	V1R1	Added subtype 8 to collect data for LPAR CPU management, and subtype 9 for dynamic channel path management.	"Intelligent Resource Director" on page 37
	V1R3	Added new fields in the Subtype 7, PAV Device section.	Release update.
Type 119 (TCP/IP Statistics)	V1R3	New record.	Release update.

Summary of Changes to Macros

Table 17 lists the new and updated callable services.

There are many different books in the z/OS library that contain MVS macros. The "Related Support" column of Table 17 indicates the books where you can find detailed information for a particular macro:

- **MVS** refers to the following set of books:
 - *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
 - *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
 - *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*
 - *z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO*
 - *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
 - *z/OS MVS Programming: Assembler Services Reference IAR-XCT*
- **Service Aids** refers to *z/OS MVS Diagnosis: Tools and Service Aids*.
- **Sysplex** refers to *z/OS MVS Programming: Sysplex Services Reference*.
- **WLM** refers to *z/OS MVS Programming: Workload Management Services*.
- **Resource Recovery** refers to *z/OS MVS Programming: Resource Recovery*.

Table 17. Summary of New and Changed Macros

Macro Name	Release	Description	Related Support
ABEND	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
ATTACH and ATTACHX	V1R2	New parameter: SDWALOC31: provides support for 64-bit virtual storage.	MVS "64-bit virtual addressing" on page 31
	V1R3	New function: ATTACHX provides support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
CALLDISP	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
CHAP	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
CONVCON	V1R1	New parameter: The CONVSMCS parameter specifies the output of a console name, console id or console validate request for an SMCS console.	MVS "Additional support for operator consoles" on page 38

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
CSRC4ACT	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4BLD	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4CON	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4DAC	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4DIS	V1R4	New Macro: New callable cell pool service support for 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4EXP	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4FRE	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4FR1	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4FR2	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4GET	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4GT1	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24

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Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
CSRC4GT2	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4QCL	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4QEX	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4QPL	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4RFR	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4RF1	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4RGT	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRC4RG1	V1R4	New Macro: New callable cell pool service supports 64-bit addressing mode.	MVS “New set of callable cell pool services for AMODE 64” on page 24
CSRPFR2	V1R4	New information: Although this macro is not new, the documentation of it is. This macro returns an allocated cell to a cell pool. CSRPFR2 is preferred over CSRPFR1 when using multiple extents and provides higher performance than CSRPFRE.	MVS Release update
CSRPGT2	V1R4	New information: Although this macro is not new, the documentation of it is. The macro allocates a cell from the cell pool. CSRPGT2 is preferred over CSRPGT1 when using multiple extents and provides higher performance than CSRPGT.	MVS Release update

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
CSVQUERY	V1R2	New parameter: OUTXLST: provides support for split RMODE load modules.	MVS Service update (APAR OW18167)
	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
DELETE	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
DETACH	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
DEQ	V1R2	New parameter: The LINKAGE parameter specifies the type of linkage the caller is using to invoke the DEQ service.	MVS Release update
	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
DOM	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
DYNALLOC (SVC 99)	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
ENQ	V1R2	New parameter: The LINKAGE parameter specifies the type of linkage the caller is using to invoke the ENQ service.	MVS Release update
	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
ESPIE	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29

Interface Changes

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
ESTAEX	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
FREEMAIN	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
GETMAIN	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
GETDSAB	V1R2	New parameter: The LOC parameter specifies whether the macro should examine all of the DSABs or only those which reside below the 16M line.	MVS Release update
GTRACE	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
IARVSERV	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
IDENTIFY	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
IARV64	V1R2	New macro: Allocate 64-bit virtual storage.	MVS "64-bit virtual addressing" on page 31
IEECMDS	V1R2	New macro: Query or remove attached commands.	MVS "Command flooding" on page 32
IOSCHPD	V1R1	New parameters: New parameters are added in support of dynamic channel path management.	MVS "Intelligent Resource Director" on page 37
IOSCUMOD	V1R1	New macro: Load module template for building IOS control unit entry.	MVS Release update
IOSENQ	V1R1	New macro: Performs IOS enqueues.	MVS Release update

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
IOSWITCH	V1R1	New macro: Returns IOS switch information.	MVS Release update
IRDFSD	V1R2	New macro: FICON switch data services	MVS Release update
IRDFSDU	V1R2	New macro: FICON switch data update services	MVS Release update
IWMCNTN	V1R4	New macro: Allows resource managers to notify workload management of changes to resources, work units, or transactions involved with resources in contention.	WLM “Workload Management updates” on page 26
IWMESQRY	V1R4	New function: This macro can now return information about the STOKEN associated with the caller’s workunit.	WLM “Workload Management updates” on page 26
IWMCPAFN	V1R1	New macro: Enforces the CPU affinity by bringing online any CPU that was taken offline by WLM.	WLM “Workload Management enhancements” on page 34
IWMMCHST	V1R4	Changed parameters: <ul style="list-style-type: none"> • New value, ACTIVE_APPLICATION, for the STATE parameter represents an active application program executing on behalf of a work request. • New values added for the RESOURCE parameter represent new waiting states for the monitoring environment. 	WLM “Workload Management updates” on page 26
IWMMCREA	V1R4	New parameter: New REPORTONLY parameter allows you to specify whether the monitoring environment is for reporting purposes only (YES) or for management and reporting (NO). The default is NO	WLM “Workload Management updates” on page 26
IWMMESTR	V1R4	New parameters: <ul style="list-style-type: none"> • New ASID parameter returns the address space identifier of the address space associated with the monitoring environment. • New ENCLAVE_TOKEN parameter returns the enclave token of the enclave associated with the monitoring environment. 	WLM “Workload Management updates” on page 26

Interface Changes

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
IWMMINIT	V1R4	New parameters: <ul style="list-style-type: none"> REPORTONLY allows you to specify whether the monitoring environment is for reporting purposes only (YES) or for management and reporting (NO). The default is NO ASSOCIATE allows you to associate a report-only PB with an enclave or address space. ENCLAVETOKEN allows you to specify an enclave you want to associate with the report-only PB. ASID allows you to specify the address space you want to associate with the report-only PB. 	WLM “Workload Management updates” on page 26
IWMMNTFY	V1R4	Changed macro: Changed reason/return codes.	WLM “Workload Management updates” on page 26
IWMMRELA	V1R4	Changed macro: Changed reason/return codes.	WLM “Workload Management updates” on page 26
IWMQINS	V1R4	Changed macro: Changed reason/return codes.	WLM “Workload Management updates” on page 26
IWMRPT	V1R4	Changed macro: Changed reason/return codes.	WLM “Workload Management updates” on page 26
IXCMSGO	V1R3	New options: ALL and OTHER are new options for the MEMBERS parameter.	Sysplex Release update
IXGINVNT	V1R2	New parameter: The LOGGERDUPLEX parameter supports automatically duplexing a coupling facility.	MVS “System logger exploitation of CF duplexing rebuild” on page 33
	V1R3	New parameter: The EHLQ parameter specifies the enhanced (or extended) high- level qualifier that will be used to construct the log stream offload data set names and log stream staging data set names when used.	MVS “64-bit virtual addressing: Additional services supported” on page 29
IXLCACHE	V1R4	New request types: Adds support for three new request types for batch cache operations: <ul style="list-style-type: none"> IXLCACHE REQUEST=WRITE_DATALIST IXLCACHE REQUEST=CASTOUT_DATALIST IXLCACHE REQUEST=CROSS_INVALLIST 	Sysplex “Batching cache structure operations” on page 20
LINKX	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
LOAD	V1R2	New function: Support for split RMODE load modules.	MVS Service update (APAR OW18167)
	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
MODESET	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
PGSER	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
POST	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
RESERVE	V1R2	New parameter: The LINKAGE parameter specifies the type of linkage the caller is using to invoke the RESERVE service.	MVS Release update
	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
SDUMPX	V1R2	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing” on page 31
SETRP	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
STAX	V1R3	New function: Adds support for 64-bit addressing mode.	TSO/E “64-bit virtual addressing: Additional services supported” on page 29
STIMER	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29

Interface Changes

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
STIMERM	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
STORAGE	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
SYNCHX	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
SYSEVENT	V1R1	New parameter: QVS returns capacity information for software licensing.	MVS Release update
	V1R3	New parameter: REQLPDAT returns performance data relating to defined capacities from WLM. New output parameter: A new output parameter, SRMSTCAP, is added to the REQSRMST SYSEVENT. Prospective callers of the REQLPDAT SYSEVENT should first invoke the REQSRMST SYSEVENT, and then check the SRMSTCAP output parameter to see if the REQLPDAT SYSEVENT is available on the system. New keyword: A new TYPE=2 keyword is added to the SYSEVENT macro, for use only by SYSEVENT ENQHOLD and ENQRLSE.	MVS "SMF support for sub-capacity pricing" on page 30
	V1R4	New sysevent: New sysevent FREEAUX added.	MVS Release update
TIME	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
TIMEUSED	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29
TTIMER	V1R3	New function: Adds support for 64-bit addressing mode.	MVS "64-bit virtual addressing: Additional services supported" on page 29

Table 17. Summary of New and Changed Macros (continued)

Macro Name	Release	Description	Related Support
VRADATA	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
WAIT	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
WTO	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
WTOR	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29
XCTLX	V1R3	New function: Adds support for 64-bit addressing mode.	MVS “64-bit virtual addressing: Additional services supported” on page 29

Callable Services for High-Level Languages

Table 18 lists the new and updated callable services.

There are many different books in the z/OS library that contain MVS callable services. The **Related support** column of Table 18 indicates the books where you can find detailed information for a particular macro:

- **MVS** refers to the following set of books:
 - *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
 - *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
 - *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*
 - *z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO*
 - *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
 - *z/OS MVS Programming: Assembler Services Reference IAR-XCT*
- **Calls** refers to *z/OS MVS Programming: Callable Services for HLL*
- **Product reg** refers to *z/OS MVS Programming: Product Registration*
- **APPC serv** refers to *z/OS MVS Programming: Writing Servers for APPC/MVS*
- **Resource Recovery** refers to *z/OS MVS Programming: Resource Recovery*.

The column “Reference” indicates in which book you can find a description of the callable service:

Table 18. Summary of new and changed callable services

Callable service name	Release	Description	Related support
ATRCCUR3	V1R2	New callable service: Called from a resource manager, tells RRS to create a cascaded unit of recovery.	Resource Recovery “Recoverable Resource Management Services (RRMS) enhancements” on page 34
ATREINT3	V1R2	New callable service: Called from a resource manager, expresses an interest in a unit of recovery.	Resource Recovery “Recoverable Resource Management Services (RRMS) enhancements” on page 34

C Language Interfaces for Workload Management Services

The following table lists the new and updated C language interfaces that can be used to access WLM services. See the following books for more detailed information:

- *z/OS MVS Programming: Workload Management Services*
- *z/OS C/C++ Run-Time Library Reference*.

Table 19. Summary of new and changed C Language Interfaces for Workload Management Services

Interface name	Release	Description	Related support
__server_classify	V1R2	Added new parameters to allow access to WLM service IWMCLSFY.	"Workload Management enhancements" on page 34
__server_classify_create	V1R2	Added new parameters to allow access to WLM service IWMCLSFY.	"Workload Management enhancements" on page 34
__server_init	V1R2	Added new parameters to allow access to WLM service IWMCONN.	"Workload Management enhancements" on page 34
__server_pwu	V1R2	Added new parameters to allow access to WLM services IWMQINS and IWMSSEL.	"Workload Management enhancements" on page 34
__server_threads_query	V1R2	Added new parameters to allow access to WLM service IWMSINF.	"Workload Management enhancements" on page 34

Installation exits

The following table lists the new and updated installation exits. See *z/OS MVS Installation Exits* for more detailed information.

Table 20. Summary of new and changed installation exits

Exit name	Release	Description	Related support
IEFUSI	V1R2	Changed exit: IEFUSI has been updated to support MEMLIMIT used with the SMFPRMxx parmlib member.	"64-bit virtual addressing" on page 31
ISGNQXIT	V1R2	New exit: A new dynamic exit, ISGNQXIT, has replaced installation exit ISGGREX0.	"Wildcard support for Global Resource Serialization resource name lists" on page 34
ISGGREX0	V1R2	Deleted exit: A new dynamic exit, ISGNQXIT, has replaced installation exit ISGGREX0.	"Wildcard support for Global Resource Serialization resource name lists" on page 34
ISGNQXITBATCH	V1R2	New exit: A new dynamic exit, ISGNQXITBATCH, is intended for use by monitoring products and OEM serialization products.	"Wildcard support for Global Resource Serialization resource name lists" on page 34
ISGNQXITQUEUEU1	V1R2	New exit: A new dynamic exit, ISGNQXITQUEUEU1, is intended for use by OEM serialization products.	"Wildcard support for Global Resource Serialization resource name lists" on page 34
ISGENDOFLQCB	V1R2	New exit: A new dynamic exit, ISGENDOFLQCB, is intended for use by OEM serialization products.	"Wildcard support for Global Resource Serialization resource name lists" on page 34
ISGDGRSRES	V1R2	New exit: A new dynamic exit, ISGDGRSRES, allows an application to provide additional information about an ENQ resource name.	"Wildcard support for Global Resource Serialization resource name lists" on page 34

Control Blocks

The following table lists the new and updated control blocks. See the following books for more detailed information:

- For information about new and deleted MVS control blocks, see the summary of changes sections in the following books:
 - *z/OS MVS Data Areas, Vol 1 (ABEP-DALT)*
 - *z/OS MVS Data Areas, Vol 2 (DCCB-ITZYRETC)*
 - *z/OS MVS Data Areas, Vol 3 (IVT-RCWK)*
 - *z/OS MVS Data Areas, Vol 4 (RD-SRRA)*
 - *z/OS MVS Data Areas, Vol 5 (SSAG-XTLST)*.
- For information about changes to JES2 control blocks, see *z/OS JES2 Migration*.
- For information about changes to JES3 control blocks, see *z/OS JES3 Migration*.
- For information about changes to z/OS UNIX System Services control blocks, see *z/OS UNIX System Services Programming: Assembler Callable Services Reference*.
- For information about changes to security server (RACF) control blocks, such as ACEE, see *z/OS Security Server RACF Data Areas*.
- For information about changes to communications server (VTAM) control blocks, see *z/OS Communications Server: SNA Data Areas Volume 1* and *z/OS Communications Server: SNA Data Areas Volume 2*.

Before using a control block as part of a programming interface, verify that you are using it as intended.

If you have a program that is using a mapping macro, a change to the mapping macro might require one of the following actions:

- **Reassemble the program:** To accommodate the change, simply reassemble the program.
- **Rewrite the program:** To accommodate the change, rewrite the program. This can be necessary if fields were moved, or changed their meaning or use.
- **Use a supported service instead of the mapping macro:** Use a supported service (such as a macro or callable service) to obtain the needed information.

Make sure to test your applications in the new release before going to production.

Table 21. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5)

Control Block (Mapping Macro)	Release
ACE (ILRACE)	V1R2
ADB (IEFZB4H1)	V1R3
AIA (ILRAIA)	V1R2
	V1R3
ASMVT (ILRASMVT)	V1R2
	V1R3
ATTRASM	V1R4
ASAYMBP	V1R4
ASCB	V1R4

Interface Changes

Table 21. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)

Control Block (Mapping Macro)	Release
ASSB (IHAASSB)	V1R1
ASXB	V1R4
ATBXCFMS	V1R4
BPXZODMV	V1R4
CDE (IHACDE)	V1R3
CSRLJASM	V1R1
CSRCPASM	V1R2
	V1R3
CSRSIIDF	V1R2
	V1R3
	V1R4
CSRYL16J	V1R1
CSVLPRET	V1R3
CSVMODI	V1R2
	V1R3
	V1R4
CVT	V1R1
	V1R2
	V1R3
	V1R4
DCCD (IOSDDCCD)	V1R1
	V1R3
DMDT (DMDT)	V1R1
ECVT (IHAECVT)	V1R1
	V1R3
	V1R4
EDT (IEFZB421)	V1R3
ENFCT (IEFENFCT)	V1R1
ENFLS (IEFENFLS)	V1R3
ENFPM (IEFENFPM)	V1R1
FIB (IGVFIB)	V1R3
FTPT (IEZVR001)	V1R1
GDA (IHAGDA)	V1R3
GSDA (IHAGSDA)	V1R3
GVT (ISGGVT)	V1R2
	V1R3
IAXPFTE	V1R4
IAZSPLIO	V1R4

Table 21. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)

Control Block (Mapping Macro)	Release
GVTX (ISGGVTX)	V1R3
IEANTASM	V1R2
	V1R3
IEANUCMP	V1R2
IEAVM101	V1R1
	V1R3
IEFDOKEY	V1R4
IEWPMAR	V1R4
IEZVD200	V1R1
IEZVG200	V1R1
IHACDE	V1R2
IHACLTE	V1R2
	V1R3
IHADDR	V1R2
	V1R3
IHAIPA	V1R1
	V1R2
	V1R3
IHALPDE	V1R2
	V1R3
	V1R4
IHAOUXB	V1R2
IHAPRD	V1R2
IHARBUP	V1R1
IHASAVER	V1R2
	V1R3
IHASVTX	V1R2
	V1R3
IKJTAIE	V1R2
	V1R3
IOBE (IOSDIOBE)	V1R1
IOCOM (IECDIOCM)	V1R1
IORB (ILRIORB)	V1R2
	V1R3
IHASAVER	V1R2
IOSB (IECDIOSB)	V1R1
	V1R3
IOSDDACH	V1R1

Interface Changes

Table 21. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)

Control Block (Mapping Macro)	Release
IOSDDEVI	V1R1
IOSDPATH	V1R1
	V1R3
IOSDPAVA	V1R1
IPWA (IOSDIPWA)	V1R2
IRACPMB	V1R2
IRAUCBX	V1R1
	V1R2
	V1R3
	V1R4
IRAEVPL	V1R2
	V1R3
	V1R4
IRALPDAT	V1R4
IRAUCBX	V1R4
IRARASC	V1R1
IRARASD	V1R1
	V1R2
IRASRMST	V1R2
	V1R3
IVT (IHAIVT)	V1R1
IWMCNTRL	V1R4
IWMECD	V1R1
IWMREN2	V1R2
	V1R3
IWMSVAEA	V1R1
IWMSVDCR	V1R1
IWMSVDEF	V1R1
IWMSVPOL	V1R1
IWMSVSEA	V1R1
IWMWRCAA	V1R3
	V1R4
IWMWRQAA	V1R1
	V1R2
	V1R3
	V1R4

Table 21. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)

Control Block (Mapping Macro)	Release
IWMYCON	V1R1
	V1R2
	V1R3
	V1R4
IXCYGEPL	V1R3
IXGCON	V1R3
IXGENF	V1R3
IXGSXCMP	V1R2
IXGSXTXT	V1R2
IXLYAMDA	V1R1
	V1R3
IXLYCAA	V1R4
IXLYCONA	V1R3
IXLYWOB	V1R4
IXLYWORB	V1R4
LGE (ILRLGE)	V1R2
	V1R3
NVT (IHANVT)	V1R1
OPSPL (ILROPSPL)	V1R2
	V1R3
ORB (IHAORB)	V1R1
ORE (IHAORE)	V1R1
OUCB (IRAUCB)	V1R2
	V1R3
OUSB (IHASOUSB)	V1R3
PART (ILRPART)	V1R2
	V1R3
PEL (ISGPEL)	V1R3
PRMESTAE (IEFZB447)	V1R3
PSA (IHAPSA)	V1R1
	V1R2
	V1R3
PVT	V1R4
QSRCD (ILRQSRCD)	V1R2
	V1R3
QWA (ISGQWA)	V1R2
	V1R3

Interface Changes

Table 21. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)

Control Block (Mapping Macro)	Release
QWB (ISGQWB)	V1R2
	V1R3
QXB (ISGQXB)	V1R3
RCE (IARRCE)	V1R1
RCT (IRARCT)	V1R1
	V1R2
RMCT (IRARMCT)	V1R2
RDCM (IEERDCM)	V1R1
SCB (IHASCB)	V1R2
	V1R3
SCD (IOSDSCD)	V1R1
SCCB (IHASCCB)	V1R1
SDWA (IHASDWA)	V1R1
	V1R2
	V1R3
STCB (IHASTCB)	V1R1
	V1R2
	V1R3
	V1R4
TCB (IKJTCB)	V1R3
	V1R4
TDCM (IEETDCM)	V1R1
	V1R3
TCT (IEFTCT)	V1R3
TICB (IOSDTICB)	V1R1
UCM (IEECUCM)	V1R1
	V1R3
WSAVT (IHAWSAVT)	V1R2
	V1R3
	V1R4
XMD (IHAXMD)	V1R2
	V1R3
XSA (IHAXSA)	V1R1

A Method for Finding Changes to MVS Control Blocks

When you order z/OS, IBM supplies data sets containing the mapping macros for many control blocks. After SMP/E RECEIVE processing, the new mapping macros are in the SMPTLIB data sets. After SMP/E APPLY processing, the new mapping macros are in the target libraries.

Interface Changes

To find mapping macros for MVS control blocks, look in the MODGEN, MACLIB, and ATSOMAC libraries. Mapping macros for JES2, VTAM, and other elements and products may be in the same libraries, or in other libraries specific to the element or product.

You might want to use ISPF's SuperCE (Compare data sets Extended) dialog, which has the following advantages:

- You can concatenate several data sets together for both the old and the new data.
- You can specify a set of SELECT statements that name the mapping macros you are interested in. Make sure to specify the name of the mapping macro. This is not always the same as the control block name. For example, to check for changes to the PSA, compare old and new copies of the IHAPSA mapping macro.

This method works better if the old data has the same level of service as the system from which you are migrating.

IPCS Subcommands

The following table lists the new and updated IPCS subcommands. See *z/OS MVS IPCS Commands* for more detailed information.

Table 22. Summary of new and changed IPCS subcommands

Command	Release	Description	Related support
Many IPCS subcommands	V1R2	Additional support: Allows users to access hierarchical file system (HFS) paths through the new PATH keyword and the existing FILE keyword.	"Service aids enhancements" on page 35
COPYCAPD	V1R4	New subcommand: New COPYCAPD subcommand generates captured dump reports.	"Service aids enhancements" on page 23
EVALDUMP	V1R2	Additional support: Allow processing of a directory other than the IPCS user's session directory.	"Service aids enhancements" on page 35
EVALSYM	V1R2	Additional support: Allow processing of a directory other than the IPCS user's session directory.	"Service aids enhancements" on page 35
IPLDATA	V1R3	New subcommand: New IPLDATA subcommand allows the generation of reports about the IPL process and options.	Release update
LISTTOD	V1R4	New subcommand: The new LISTTOD subcommand converts TOD clock values to legible time stamps.	"Service aids enhancements" on page 23
LISTDUMP	V1R2	Additional support: Allow processing of a directory other than the IPCS user's session directory.	"Service aids enhancements" on page 35
OPCODE	V1R4	Additional support: upgrades the OPCODE IPCS subcommand and dialog primary command to display the mnemonics for multi-byte split operation codes (such as E3, EB, or ED) when only the first byte or two is entered.	"Service aids enhancements" on page 35
RUNCHAIN	V1R3	New parameter: New SORTBY parameter on the RUNCHAIN subcommand lets you control the order of processing for chain elements.	Release update
VERBEXIT IEFIVAWT	V1R3	New verb exit routine: New VERBEXIT IEFIVAWT subcommand allows you to format a list of pending XCF work for tape allocation.	Release update
VERBEXIT IEFIVIGD	V1R3	New verb exit routine: New VERBEXIT IEFIVIGD subcommand allows you to format the global tape devices	"Automatic tape switching" on page 36
VERBEXIT SRMDATA	V1R4	New parameters: New parameters related to workload manager enhancements: <ul style="list-style-type: none"> • QLIM • ASQLIM • ENCQLIM • ENQQLIM 	<i>z/OS MVS IPCS Commands</i>
VERBEXIT VSMDATA	V1R3	New filters: The OWNCOMM parameter now provides greater selectivity by allowing you to select the new CSA or SQA options.	Release update

Table 22. Summary of new and changed IPCS subcommands (continued)

Command	Release	Description	Related support
WHERE	V1R2	Additional information: Provides information about addresses that fall in private or extended private area storage.	“Service aids enhancements” on page 35
WLMDATA	V1R4	New subreport: New CONTENTION parameter on the WLMDATA subcommand.	<i>z/OS MVS IPCS Commands, z/OS MVS Diagnosis: Reference</i>

Where to Find Changes to System Messages

Information on new, changed and deleted messages is necessary to migrate automated operations. For lists of new, changed, and deleted messages, see:

- *z/OS Summary of Message Changes.*

For information on changes to system completion codes and wait state codes, see *z/OS MVS System Codes*.

A Method for Finding Changes to MVS and TSO/E Message Texts

Automation routines are sensitive to changes to message text between releases. You can find changes to message texts in the following ways:

- The Summary of Changes of the related messages book can be helpful when you go from one release to the next.
- Data set SYS1.MSGENU contains data that can help you identify changes to message texts more accurately. This method allows you to find message text changes between your current release and whatever release you choose to migrate to. This method is described below.

Using SYS1.MSGENU to Find Message Text Changes

IBM supplies a data set containing the text of system messages that are translated. This data set, called SYS1.MSGENU, contains the text of system messages in the form of message skeletons. (For more information, see *z/OS MVS Planning: Operations*.)

Note that this method will not show changes to:

- MVS system messages that are not translated, such as IPL and NIP messages (which are issued before the MVS message service is available)
- Other product messages that are not translated, such as DFSMS/MVS messages, and JES3 messages.
- For JES2 messages, use the appropriate SYS1.VnRnMn.SHASMENU data set.

Also, this method works better if the “old” copy of SYS1.VnRnMn.SHASMENU has the same level of service as the system from which you are migrating.

Once you have installed the OS/390 Release 4 or higher level of the data set you are comparing, you can compare the new data set with the data set on the system from which you are migrating. Depending on how you do the comparison, you can get output like the following.

For new messages, the output might show an I (for Insert) on the left:

```
I - IEA403I      VALUE OF RMAX HAS BEEN CHANGED TO 99
```

Interface Changes

For messages whose text has changed, the output might show both an I and a D, indicating that a record in the message file has been replaced:

```
I - IEE162I 46  &NNN. ROLL &A. MESSAGES (DEL=R OR RD)
D - IEE162I 46  &NNN. ROLL &A. MESSAGES (DEL=R, RD)
```

This means that, in message IEE162I, (DEL=R, RD) was replaced by (DEL=R OR RD).

Using this information, you can decide if your automation routines need to be changed.

Appendix. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in z/OS enable users to:

- Use assistive technologies such as screen-readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size

Using assistive technologies

Assistive technology products, such as screen-readers, function with the user interfaces found in z/OS. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.

Keyboard navigation of the user interface

Users can access z/OS user interfaces using TSO/E or ISPF. Refer to *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Volume I* for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

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